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ARMY INFORMATION DIGEST

U.S. ARMY MAGAZINE

JUNE 1960



This
is
special
warfare...

U.S. ARMY STYLE

ARMY INFORMATION DIGEST



THE OFFICIAL MAGAZINE OF
THE DEPARTMENT OF THE ARMY

The mission of ARMY INFORMATION DIGEST is to keep personnel of the Army aware of trends and developments of professional concern. The Digest is published under supervision of the Army Chief of Information to provide timely and authoritative information on policies, plans, operations, and technical developments of the Department of the Army to the Active Army, Army National Guard, and Army Reserve. It also serves as a vehicle for timely expression of the views of the Secretary of the Army and the Chief of Staff and assists in the achievement of information objectives of the Army.

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Use of funds for printing this publication approved by Director, Bureau of the Budget, 8 May 1957.

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COVER: Whether surmounting precipitous heights to launch surprise guerrilla attacks, or penetrating the minds of men by leaflet and radio barrage, Army Special Warfare forces keep techniques of unconventional warfare razor-sharp for any war-time eventuality.

COMMAND LINE

Army Views On Vital Issues

ON THE RIFLEMAN'S ROLE

"As for the infantryman himself, the rifle is still his basic weapon. We must not forget that the military purpose of war is to achieve control over land and the people who live on it. The ultimate measure of the control which has been obtained is the area dominated by the infantryman with the fire of his individual weapon. In the final analysis, the success with which that domination is established, maintained and extended depends in large part on the soldier's mastery of his rifle."

*General Lyman L. Lemnitzer, Army Chief of Staff,
before the National Rifle Association
Washington, D. C., 23 March 1960.*

ON MAN, MACHINES AND SYSTEMS

"The idea that by merely pushing a button automatic controls will take over and perform the most complex tasks sounds magnificent, but when you get down to brass tacks, no machine or management system is any better or more efficient than the people who construct and operate it. You can't get along without people. Machines and systems cannot and will not gain primacy over man."

*Secretary of the Army Wilber M. Brucker,
at the Army Management School
Fort Belvoir, Virginia, 1 March 1960.*

ON DUAL CAPABILITY

"Because the Army faces a dual threat—an atomic threat and a conventional threat—in the foreseeable future, research and development must provide a variety of weapons systems to fight both an all-out nuclear war and local aggression. On the one hand we must have lightweight weapons that can be easily air-transported while on the other, we must have rugged, heavier weapons capable of sustained ground operation under the worst possible conditions. This illustrates the type of difficult requirements which determine the number and types of Research and Development projects. It is not an easy matter out of available resources, to give our forces the weapons they need for this dual-capability."

*Lieutenant General Arthur G. Trudeau
Chief of Army Research and Development*

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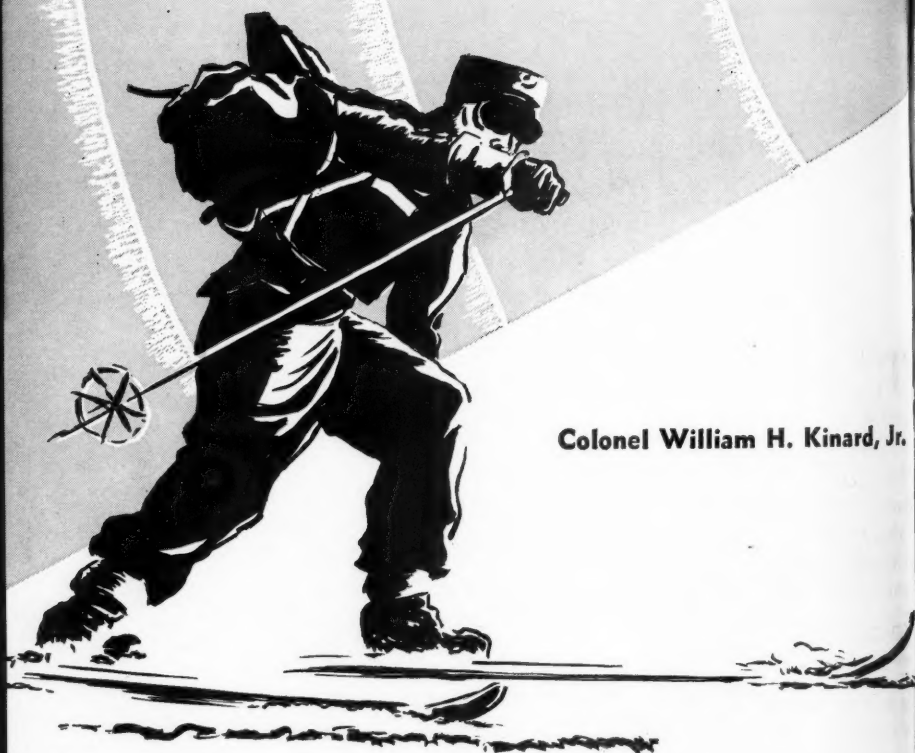
ARMY
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U. S. ARMY MAGAZINE

JUNE 1960
VOLUME 15 NUMBER 6

**A versatile, two-edged, deep-penetrating weapon
that can turn enemy resources to military advantage—**

This Is Special Warfare U. S. Army Style



Colonel William H. Kinard, Jr.



Front-line amplifiers broadcast psychological warfare messages during Korean War.

THROUGH Special Warfare, the United States Army now has the ability to extend the ground battle to areas deep within the enemy's lines, there to use against him a large share of his own resources. Also through Special Warfare, the United States Army now has the ability to inflict psychological as

well as physical damage on the enemy.

For the first time in its history, the Army is developing and maintaining during peace a capability for exploiting this two-pronged weapon of Special Warfare. For the first time in its history, the Army is developing and maintaining during peace specific units in being and trained for psychological and unconventional warfare in the broadest sense. For that essentially is

COLONEL WILLIAM H. KINARD, JR., General Staff, is Deputy Director of Plans for Special Warfare, Office of the Deputy Chief of Staff for Military Operations, Department of the Army.



Radio provides capability for strategic psychological warfare and also supports operations of subordinate units.

what Special Warfare is — psychological and unconventional warfare, with the latter including guerrilla warfare, evasion and escape, and subversion against hostile states.

At no time in the past have United States military forces been prepared to wage this type of warfare from the outset of hostilities. Consequently we left the enemy's rear areas free of much of the destruction and diversion that could have been his. At the same time, we unnecessarily accorded to him the psychological initiative as well.

FROM the very beginnings of our Republic, guerrilla warfare has been employed in one form or another. American guerrillas and guerrillas led by Americans have set an example unsurpassed in courage, tenacity, sacrifice, and daring. These exploits have become a part of American military tradition. A glance at any TV schedule or a twist of the dials reveals that even today their deeds are a continuing source of drama and excitement. Not until World War II, however, did guerrilla warfare receive more

than passing recognition of its importance to military operations.

The war which established the independence of the thirteen American colonies and every war in which the United States has since participated have also seen psychological warfare used by each opponent in seeking to achieve his goals. But again it was not until World War II that psychological warfare emerged as a specific military weapon within the U. S. Armed Forces. At the close of World War II, General Eisenhower summed up this new role: "Psychological Warfare has proved its right to a place of dignity in our military arsenal."

Psychological Warfare Goals

THE psychological aspect of Special Warfare is the planned use of propaganda and related activities, together with the exploitation of other actions, for the primary purpose of influencing the opinions, emotions, attitudes, and behavior of enemy, neutral, or friendly foreign groups in such a way as to support the accomplishment of national aims and objectives.

This waging of war for and against the minds of men is by no means new. It is as old as time itself. The wars of faith, of conquest, of revolution, even pirate maraudings—all have been marked by the use of some form of psychological warfare.

Today's concept of psychological warfare, however, particularly with its emphasis on the "planned" use of psychological measures, reflects the new role which psychological warfare has attained in military operations. This new role is gaining increased recognition not only in the military sphere but in the political realm as well.

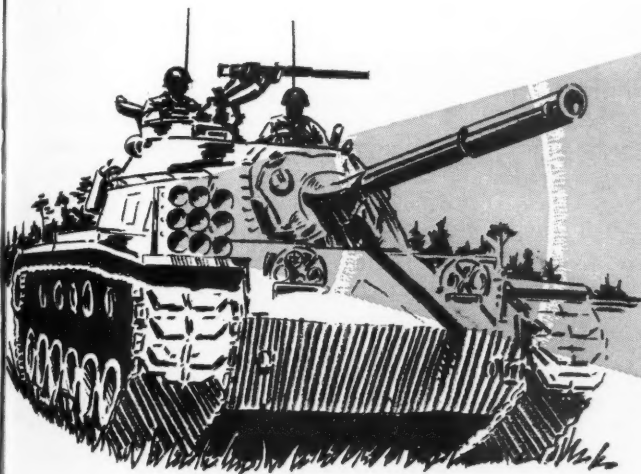
Previously, psychological warfare had been treated as separate and apart from the primary struggle being carried on in the main arena of diplomacy or war. It was looked upon simply as a handmaiden of policy — an instrument or tool

whose usefulness was limited to the role of explaining those policies or actions which were considered good or necessary and explaining away those policies or actions which turned out to be unsound or undesirable. Needless to say, some people today still hold to this view.

For the most part, however, psychological warfare today has become an organized and integral component within a nation's efforts to gain its objectives, whether in war or in peace. One reason for the emergence and development of psychological warfare as a conscious concern of governments is the greater ease with which it has become possible to reach a mass audience.

Perhaps an even more basic reason is the growing realization of the extent to which the psychological factor is inherent in both policy and action. The importance of this factor was clearly pointed out by

Mounted on tanks, loudspeakers can range far and wide to deliver messages.





The printing press may prove just as effective as live ammunition when 105mm shells carry persuasive messages into enemy territory.

President Eisenhower's Committee on International Information Activities in its 1953 report:

"In reality, there is a psychological aspect or implication to every diplomatic, economic, or military policy and action . . . Every significant act of virtually every department and agency of the government has its effect, either positively or negatively, in the global struggle for freedom."

Whether the psychological measures planned consist of propaganda or of other actions, or both, all must be designed to support national policy. In its simplest terms national policy, in time of peace, is security and welfare. In time of war, it is survival and victory.

The Army's wartime psychological operations contribute to the success of national policy by measures which are designed to:

- Lower or destroy the morale of the enemy and weaken his will to resist.
- Sustain the morale of friendly groups and strengthen their will to resist.
- Influence the opinions, attitudes, and behavior of any foreign group in a direction favorable to the accomplishment of national aims and objectives.

IN ORDER to attain these objectives, psychological warfare tasks are formulated and programs are developed—all designed to:

- ▶ Induce specific acts or programs of behavior on the part of foreign groups.
- ▶ Create dissension, distrust, and disaffection within specific enemy groups.
- ▶ Drive a wedge between the enemy's government and his people.
- ▶ Encourage, foster, and give direction to resistance movements within enemy areas.
- ▶ Split the enemy and his allies or supporters.
- ▶ Deny to the enemy any moral or material support from neutral nations or groups.

PSYCHOLOGICAL warfare is not a magic panacea which can be summoned in times of distress to gain a strategic or tactical victory which our physical forces have failed to accomplish. It is, however, a force which, when used widely and judiciously, and when integrated into overall operational planning, can greatly increase the possibilities of success, often at a lower cost in time, materiel, and—most important—human lives.

To facilitate sound planning and to assure its integration into overall operations, a definite organizational structure for psychological warfare has been developed and established within the United States Army. This structure includes staff officers at field army, corps, and division—all within the G3 sections—as well as TOE units for the conduct of psychological warfare operations. These units include organizations with capabilities which range from radio broadcasting to front-line loudspeaker operations and from the publication of newspapers to the printing and dissemination of surrender leaflets.

RADIO BROADCASTING AND LEAFLET BATTALION is normally assigned to Theater Army or to an Army Group, thus providing a capability for strategic psychological warfare operations and for supporting the tactical operations of subordinate units. The battalion is composed of an organic Headquarters and Headquarters Company and attached Reproduction, Radio Broadcasting, and Consolidation

Companies as required. Headquarters and Headquarters Company is responsible for planning and preparing the actual propaganda materials. The Reproduction Company and the Radio Broadcasting Company provide the facilities for printing or disseminating these materials by radio, as appropriate. The Consolidation Company has the primary mission of assisting Civil Affairs operations.

Tactical psychological warfare operations within the field army area are conducted by the LOUDSPEAKER AND LEAFLET COMPANY. This company is equipped with mobile printing presses and loudspeakers for supporting the combat operations of the field army.

Unconventional Warfare

THE antecedents of unconventional warfare are hardly less rooted in antiquity than are those of psychological warfare. If unconventional warfare is any younger, it is perhaps because it is for the most part associated with small groups, and mankind did not begin to form groups for many thousands of years.

Jeep-mounted loudspeakers can be used to broadcast messages to enemy troops or to guerrillas behind the lines.





Through roaring surf on a forbidding coast line, a crew training in amphibious operations lands a courier or picks up information.

It takes only two to wage psychological warfare, if you count the target, whether or not he returns the favor. Unconventional warfare, too, is now looked upon as an

inherent element of combat operations—one which can make a major contribution to the success of conventional forces.

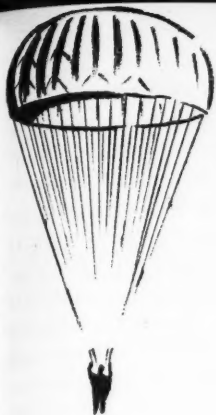
Unconventional warfare includes three interrelated fields of action: guerrilla warfare, evasion and escape, and subversion against hostile states. The latter field comprises those actions taken by underground resistance groups or individuals for the purpose of reducing the military, economic, psychological, and political potential of the enemy. Initially, resistance type operations are covert, but as these groups develop strength they become more overt. Eventually their status may shift to that of a guerrilla force.

Guerrilla warfare operations are conducted generally in enemy territory by predominantly indigenous forces with the objective of reducing the combat effectiveness, industrial capacity, and morale of the enemy. This objective is accomplished through the interdiction of enemy lines of communications and attacks upon his military installations. Suitable targets include missile launching sites, rail and pipe lines, bridges, communications media, supply depots, and ammunition dumps.

Guerrilla forces can also assist in such other fields as intelligence, target acquisition, and post-strike analysis. The emphasis, however, is on offensive actions conducted



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over widely dispersed areas. These operations are designed to retard the enemy's advance and cause him to divert forces which would otherwise be available for use against friendly conventional units. Guerrilla warfare thus has a double-barreled effect. It not only denies to the enemy a major portion of his own human and material resources but turns these against him.

Guerrillas depend heavily upon support of the local civil population for success of their operations. This support takes many forms—moral and material. It includes the operation of intelligence and warning nets, as well as provision of food, clothing, transportation and other supplies. Psychological warfare plays a major role in developing and maintaining support of the people, in systematically building up their morale and will to resist, and no less systematically destroying the morale of the enemy and his will to resist.

Also, guerrilla forces may require considerable outside support if they are to be militarily significant. Moreover, the effectiveness of guerrilla operations and the degree to which they contribute to overall military objectives depend largely upon the measure of control and



Mission of Special Forces Group Airborne is to infiltrate by land, sea, or air into pre-selected target areas to organize local guerrillas operating in enemy territory.

This is Special Warfare

coordination exercised by the commander of the conventional forces.

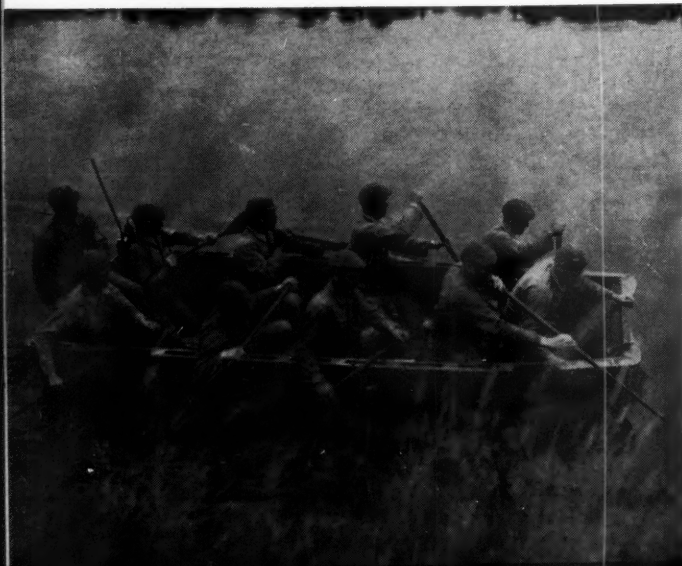
To provide the mechanism for logistical support of guerrilla forces and for control and coordination of their operations, it is contemplated that a joint unconventional warfare task force would be created where necessary and appropriate. This task force would accomplish detailed operational planning and would exercise operational control over unconventional warfare forces allocated to it.

The Army TOE unit for conducting unconventional warfare operations is the SPECIAL FORCES GROUP AIRBORNE. Its mission is to infiltrate by land, sea, or air into pre-selected target areas for the purposes of organizing the indigenous guerrilla potential and conducting unconventional warfare operations in support of conventional military operations.

Each Special Forces soldier is highly trained and cross-trained in a variety of skills. He can fight in the mountains, in the jungles, and in cold weather. He is also trained in underwater demolitions and in hand-to-hand combat.

His basic operational unit is a team or detachment composed at full strength of two officers and ten enlisted men. The detachment includes a medical technician, capable of performing minor surgery, and specialists in light and heavy weapons, communications and demolitions. Each detachment is considered capable of organizing, training, and directing the operations of a guerrilla force many times—perhaps fifty to one hundred times—its own number, depending upon force requirements and conditions within the operational area. As operations expand, similar detachments of slightly increased strength are deployed to coordinate and control activities of subordinate units in the enlarged area of operations.

TO AUGMENT the Active Army's capability for conducting Special Warfare operations, both Special Forces and psychological warfare units have been organized within the Army Reserve. In addition, Special Forces units have been established within the Army National Guard in Alabama, Louisiana, North Carolina, Utah, and



Faces blackened, Rangers training in Germany practice silent river crossing to make landing behind "enemy" lines.

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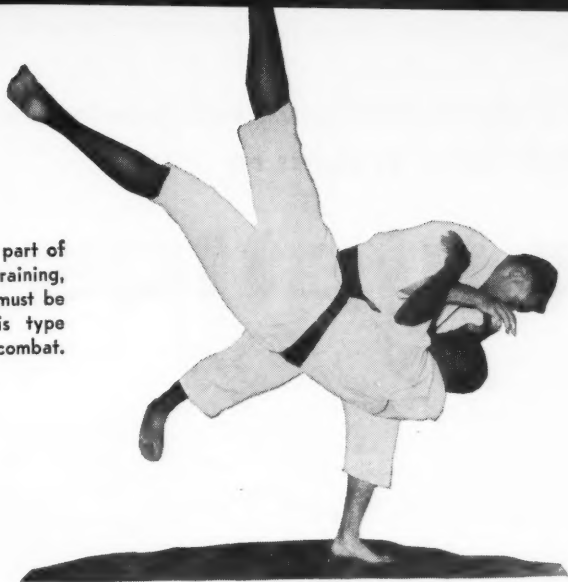
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Judo classes are part of Special Forces training, and all soldiers must be proficient in this type of hand-to-hand combat.



West Virginia. Individual Reserve officers have also been selected for important mobilization staff assignments both at Department of the Army and oversea command levels.

Throughout the year, the Army's Special Forces and psychological warfare units are engaged in rigorous and realistic training exercises all over the world. Army Reserve and Army National Guard units are similarly active, not only during annual periods of active duty training, but even more frequently, at their home stations.

These exercises do not go unnoticed by the Communists, as revealed in a recent dispatch, colored and embellished as usual, from the East German news agency. Dated Munich, this dispatch stated in part:

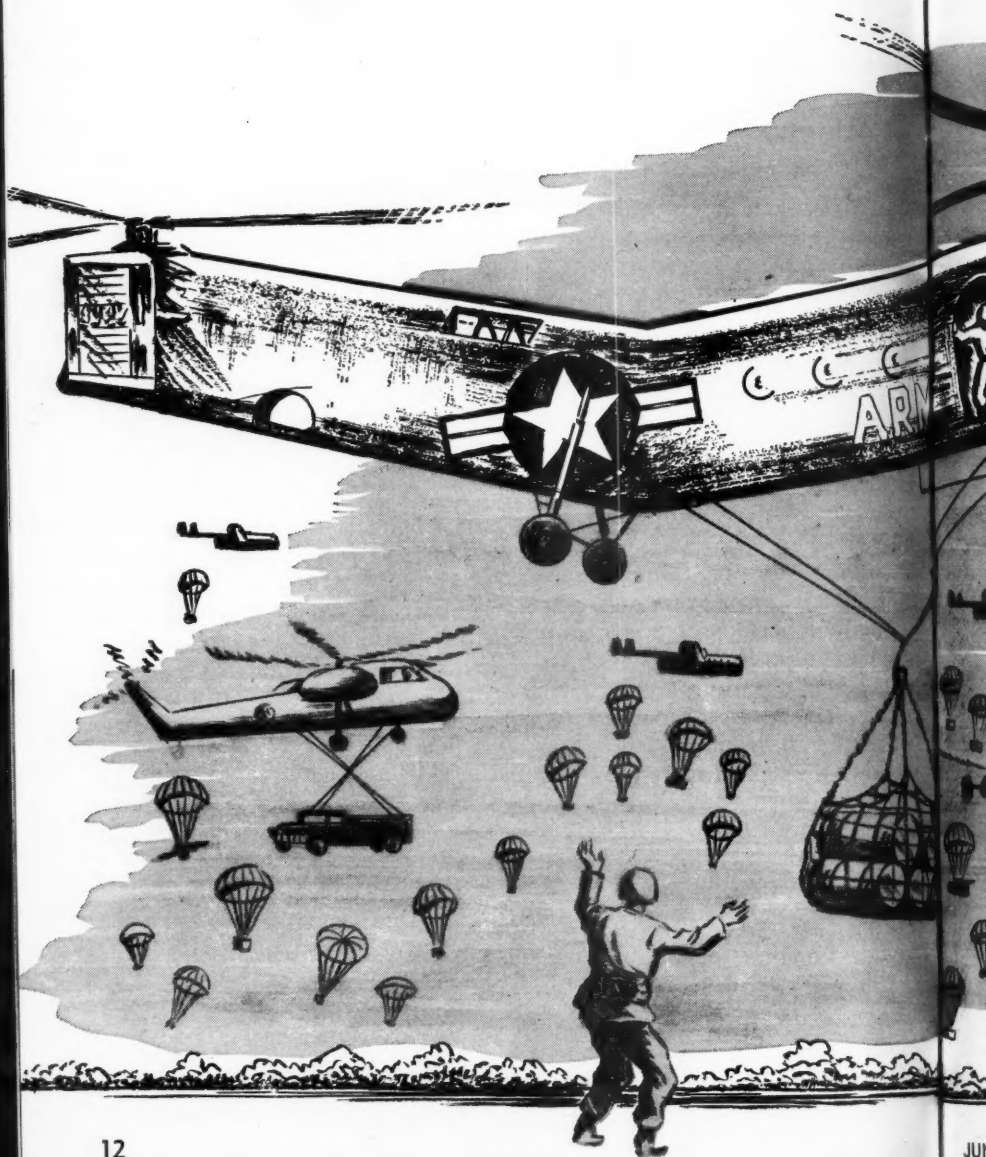
"The notorious Tenth Special Forces Group, a special US unit trained for sabotage, espionage, and murder, will soon hold maneuvers in the Bavarian Alps in preparation for X-Day and for increased sabotage against the German Democratic Republic and the

people's democracies. The sabotage troops will be parachuted into a pre-determined area. They have been assigned the task of reaching strategically important points and plants. Most of the US saboteurs speak German. They have been especially trained in silent killing, and many wear the clothing of the local population of Upper Bavaria . . ."

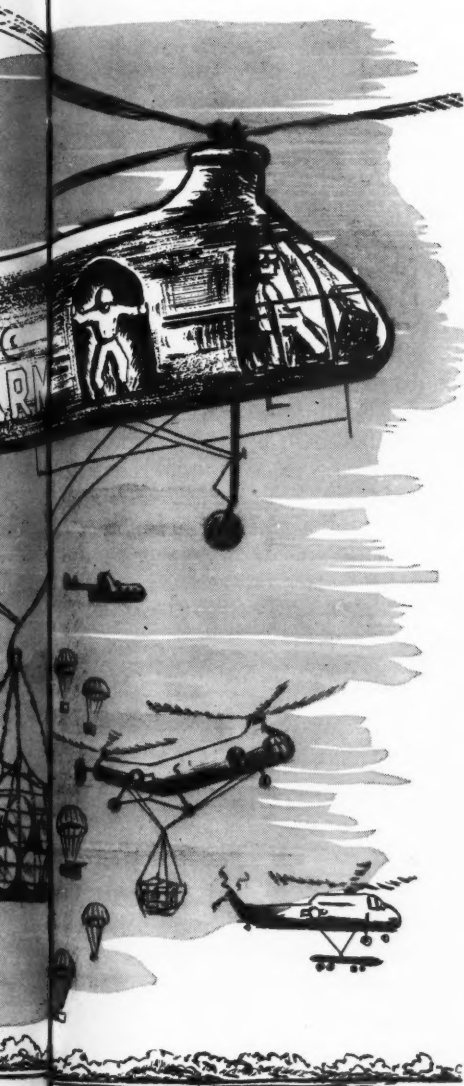
This dispatch is not the first to indicate the growing concern on the part of the Communists nor will it be the last. For the Communist leaders realize that the resistance potential which exists among the peoples living under governments boasting the hollow name of "people's democracies" and the mock title of "democratic republics" constitutes a truly massive deterrent to Communist aggression. The existence of Army Special Warfare units heightens the deterrent effect of this potential resistance and at the same time provides the Army with another versatile weapon which can be used with discrimination throughout the entire scale of warfare.

*A rapid evolution in concepts and techniques is underway
as research trains its sights on*

Logistics for



to the Future



Brigadier General

Howard K. Eggleston, Jr.

THE success of the United States Army in future combat will depend, to a large extent, on the effectiveness of its research effort. In the past, the Army concentrated its research on the design of better weapons and other types of "hardware." Recently, however, the spectrum of Army research has been expanded to place emphasis on the conduct of applied research in logistics. This new area of study, identified simply as "logistics research," is concerned primarily with "how" the Army provides supplies and materiel support to its fighting forces.

In both World Wars I and II, the U. S. Army's logistical organization and systems were developed mainly after hostilities had commenced. They were brought into being with the help of specialists in management engineering, transportation, communications, inventory management, and other fields hurriedly recruited from civil life. This

BRIG. GEN. HOWARD K. EGGLESTON, JR., Corps of Engineers, is Assistant Chief of Engineers for Military Supply, Office of the Chief of Engineers, Department of the Army.

Logistics for the Future

procedure could be followed because "time" was not as critical as it has since become. In the future, however, success or failure in either localized or general war involving nuclear weapons may well be determined by the adequacy of prior preparations.

If it is to serve its intended purpose, the logistical system of the U. S. Army must adapt itself to the nature of future warfare. It must be prepared to function in an environment that previously would have been called chaos. It must anticipate that the flow of materiel will be interrupted frequently and seriously. Its personnel must be prepared to live and operate under a constant threat of destruction. It must adapt itself to a greatly increased complexity of weapons and test equipment, and provide a much higher degree of quality control and timely support. These and many other effects of the nuclear age have created a vast requirement for logistics research.

To meet the challenges of the future, there must be a revolution in logistic concepts and techniques. Timeliness and effectiveness of logistic research will largely determine the Army's capability to meet emergencies and to support field operations effectively.

MUCH has been written concerning the new weapons and equipment which the Army now has or soon will have — roll-on-roll-off ships, field data computers, the all-purpose ballastable crawler tractor, to name a few. Possibilities for the more distant future are such items as the flying crane and the zero ground pressure vehicle. These and many other products demonstrate the wide range of Army research activity in the field of "hardware."

This discussion, however, is concerned primarily with what the Army is doing to learn how it can most effectively use this hardware if it becomes available and, even more important, how it can accomplish

All-purpose ballastable tractor, here performing varied tasks, is one of new and versatile items of equipment that demonstrate wide range of Army research activity.



the logistic support job if lack of funds precludes adequate procurement of such equipment.

All too frequently many people assume that a new item becomes available throughout the Army as soon as they read the initial press releases on its successful test. In many instances, however, lack of funds prevents prompt completion of development and initial procurement. Moreover, it frequently takes five to ten years to obtain sufficient quantities to equip the entire Army.

Logistics research, too, must develop techniques and concepts which are practical from a budget viewpoint. Both in attitude and approach, logistics researchers must be down-to-earth rather than "dreamers."

Organization for Logistics Research

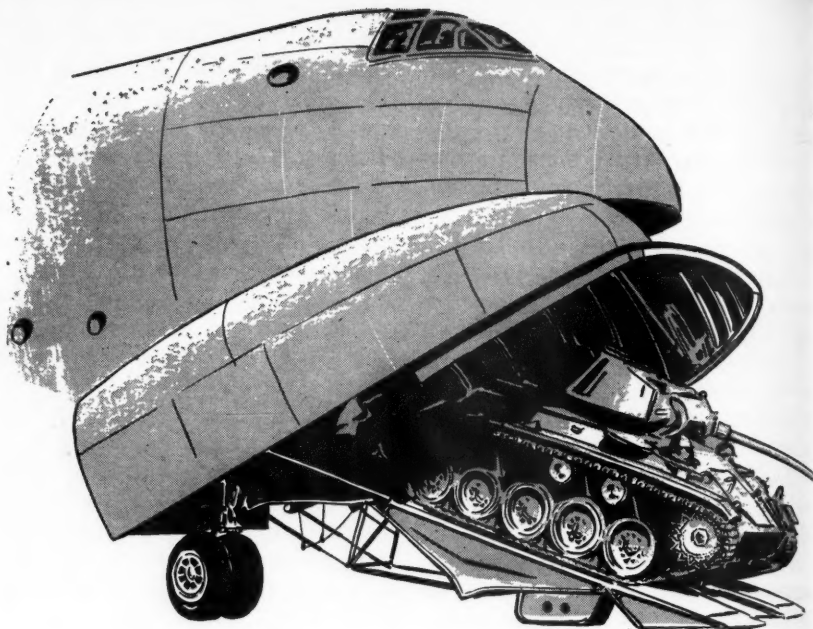
THE first major Army-wide organization for logistics research occurred in 1956 when the present combat development system was established. The U. S. Continental Army Command was charged with the responsibility for organizing, coordinating and stimulating the research activities of the various schools and Technical Services. Originally, there were sixteen major fields of research, of which one was concerned with logistics—Logistic Support Operations—for the Army in the field. In 1958, a second major logistics field was added—CONUS Support Operations.

The existing combat development system of the U. S. Army provides the means of increasing the tempo and scope of Army research to meet the logistics challenges of the future. Within this system, the Technical Services and the various combat arms and Technical Service

schools have now established specific organizations to conduct research and studies in combat developments. Until recently this program was concerned primarily with the development of new *combat* techniques. Now, research aimed at developing new logistic concepts and techniques is a significant part of the program managed by the Commanding General, U. S. Continental Army Command.

In 1958, the Deputy Chief of Staff for Logistics established a Logistics Research and Doctrine Department at the U. S. Army Logistics Management Center, Fort Lee, Virginia, and made this new agency a part of the combat developments system. Its primary responsibilities were threefold: to recommend new logistic concepts and doctrine to the Deputy Chief of Staff for Logistics; to develop and coordinate an Army-wide logistics research program; and to work closely with all agencies performing logistics research. Concurrently, CONARC placed greater emphasis on testing new logistic concepts by increasing the logistic staff at the Combat Development Experimentation Center, Fort Ord, California.

PROBLEMS for study are carefully selected to take advantage of the available scientific, mathematical, and other special skills for exploiting a technique called "operations research." This technique consists primarily of formulating the problem in clear and simple terms, expressing it in mathematical equations whenever practical, and developing a solution by "optimizing" some function or characteristic, such as using less labor or



Providing means of moving battle equipment rapidly by air to deliver firepower where and when needed by field commanders is part of the task of logistics research.

less transportation for a given operation or requiring less inventory to achieve a desired percentage of availability of an item from stock.

The applicability of operations research techniques to logistical as well as strategic and tactical operations was strikingly demonstrated by Great Britain during World War II. Much of her effective showing against Germany has been attributed to the maximum utilization of her scarce manpower and resources through "optimization" by operations research.

Management of Logistic Research

WITH continual improvements in logistics techniques, concepts, and research methods, and with the increase in the number and scope of logistics studies undertaken, an ever-increasing body of knowledge is accumulating in the form of com-

pleted studies, reports, and articles. Unless this information is systematically organized to build successfully upon all existing knowledge, duplications in study effort and gaps in study coverage will certainly occur.

The Logistics Research and Doctrine Department of the U. S. Army Logistics Management Center has developed a technique for cataloging such information, of both military and civilian origin, to permit its ready retrieval for research.

"Logistics" is divided into 151 component subjects. In some instances, only one subject is applicable to a given document while in other cases as many as sixty are pertinent. Unlike most conventional cataloging, data also are assembled on studies being planned or prepared. The information is entered on punch cards, and is processed by standard punch card accounting

machines. By the beginning of 1960, approximately 1,500 studies and articles had been catalogued. Print-outs by corporate author, subject headings or any other combination are available to anyone conducting logistics research.

This management tool, supplemented by the wholehearted participation of all logistic research agencies in the exchange of information, will permit the development of a coordinated Army-wide annual research program. The first of these annual programs will be completed shortly for the Fiscal

Year 1961 period. Besides precluding duplication of effort, such programming will reduce the possibility of gaps in vital aspects of research. Thus Army logistic research organizations can now be effectively managed to concentrate on the most significant logistics problems.

Major Influences

PROBABLY the most significant factor affecting the Army's logistic research mechanism is the mobility requirement for the future. It is anticipated that combat divisions

At U.S. Army Transportation Materiel Command—

Electronic Data Processing Speeds Supplies World-Wide

ONE of the Nation's most powerful electronic data processing systems has been added as the heart of a new global military supply network, designed to speed handling of requisitions for Army Transportation Corps materiel ranging from tiny washers to entire aircraft.

The system, which will work five times faster than existing methods, has been installed at the U. S. Army Transportation Materiel Command (TMC), St. Louis, Missouri. It communicates by wire and radio circuits with military installations in continental United States and overseas.

Formerly, even utilizing electronic equipment and automatic transmission, it required about 15 days to process requisitions from initial receipt to actual shipping order. Now the computer, known as IBM 705 III, gets the materiel on the road in less than 72 hours.

The system is connected by leased telephone lines to four major supply depots and numerous military installations in this country, and to Oversea Supply Agencies in New York, New Orleans and San Francisco. These in turn are connected to oversea facilities by radio.

The Command supplies parts to users of Transportation Corps equipment throughout the world. There are more than 250 "customers," including Army, Navy and Air Force installations, as well as nations participating in the U. S. Military Assistance Program. Its huge inventory, valued at about \$780,000,000, consists of parts for maintenance of marine, railway and aircraft equipment.

All of the necessary information about this gigantic inventory — some 300,000 separate items—is now contained on 45 reels of magnetic tape. If on paper documents, eight miles of standard file drawers,

Logistics for the Future

of the future must be nearly 100 percent mobile. They must be able to move many miles in a day either laterally or forward. Not only must combat units have the means for rapid movement in attack but they also must be able to move to lessen their vulnerability.

But a combat force does not move in isolation. It must be supported by a "logistic tail"—units capable of giving the combat force the support it needs in such vital areas as supply, maintenance, communications, engineer support and medical service. Not only will the

logistic units of the future have to provide support in a dangerous environment, but they often will have to provide it "on the run."

The task of developing the organization, equipment, and techniques which logistical units must have in order to keep pace with the fighting forces is not an easy one. But it is one that is being attacked vigorously by all elements of the Army's logistic research apparatus.

In the past, logistic units and installations have been relatively free from direct attack. Now, in order to be realistically prepared



Operator places punched cards into machine which "reads" parts request information onto magnetic tape. Automatic Data Processing is heart of the new global military supply network of U. S. Army Transportation Materiel Command.

laid end to end, would be required for the same information.

The computer enables TMC to merge into one master tape file all the interrelated records of its six operating departments—maintenance engineering, cataloging and identification, materiel requirements, procurement and production, depot supply activities and accounting.

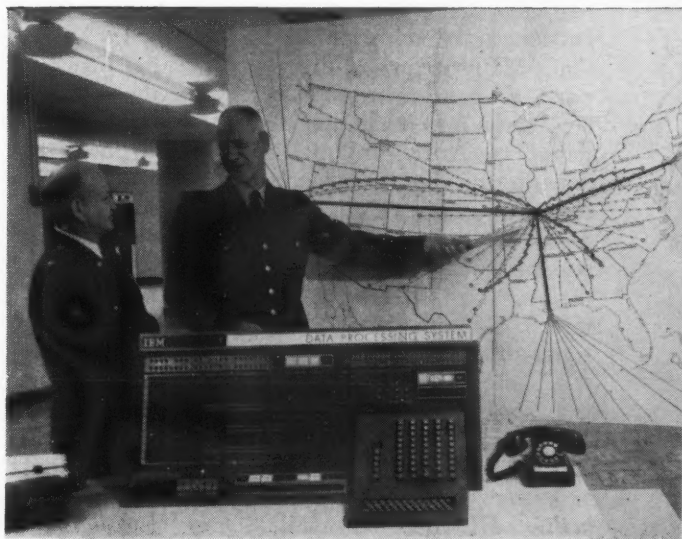
With electronic speed and accuracy, the computer automatically orders the requested part from the supply depot nearest the requisitioning installation. If the item is not available, the device will determine if a substitute part is in stock. Obsolescence is reduced as the computer automatically specifies shipment of older but usable items to insure rotation of

for any future conflict, the logistical organization itself must be able to withstand direct attack. This calls for revision in concepts of organization and deployment. Diversion of materiel enroute may become a frequent requirement. Over-the-beach operations must be capable of handling diversions. A greater number of small units may be required. And above all, logistic command reaction and direction must be prompt and accurate. The technique for coping with these potential situations is an immediate task for logistics research.

The logistical system of the future must be capable of more rapid response to demands, and it must learn to operate with less material in the pipeline and with fewer personnel. Tested civilian management techniques which are adaptable to wartime conditions must be discovered and applied as extensively as possible. This is particularly true in the field army area where a drastic reduction in logistic paper work is mandatory.

Some means must be found for reducing the total burden on the logistic system to improve its war-

New system communicates over wire and radio circuits with military installations in U.S. and overseas locations.



stocks. It also issues warnings when stocks of particular items are too low or too high. When new stocks are needed, it issues purchase orders. It also produces periodic consolidated management reports.

More than 1000 requisitions flow into the computer daily. These requests are converted electronically into shipping orders and transmitted automatically to supply depots, at New Cumberland,

Pennsylvania, Atlanta, Georgia, Fort Worth, Texas, or Stockton, California.

Brig. Gen. William B. Bunker, Commanding General of TMC, cites advantages of the new system: "The ability to handle orders faster will enable us to work with smaller inventories. In turn, this will reduce losses due to obsolescence. These factors are expected to save at least \$6,000,000 annually for the next three years."

Logistics for the Future

time dependability. This is not only a matter of tonnage but also, and perhaps more important, restriction of the number of items to be managed. Responsiveness is likely to increase sharply as the total number of items is reduced. The variety and scope of "services" must also be reduced to a minimum.

If mobility and speed of supply responsiveness are to be increased, "austerity" of support must be practiced more than it is at the present time. The determination of acceptable degrees of austerity for various logistic functions is a factor in all logistic research.

A technique must be devised to provide "one-stop" support without reducing the effectiveness of the battle-tested Technical Service system. Many items require the support of two or more Technical Services—for example, maintenance of Army aircraft involves Transportation, Signal and sometimes Ordnance Corps. Research must determine the best way to support such equipment at one location. The best solution is not necessarily the so-called "branch immaterial" composite unit, using the pooled skills of various Technical Services.

THE magnitude of the logistic task may vary sharply and often. Time will not be available to "tailor" commands and forces to meet fluctuating conditions. Since its available personnel and equipment will be relatively small, the logistic organization of the future must be conservative in its demands on resources but, at the same time, it must have a high order of responsiveness. There is no easy solution to this problem.

Future Applications

IN THE short time that logistics research has been conducted on a sizable scale, many tangible and practical benefits have resulted. Among these are:

Use of Automatic Data Processing Equipment. One of the most significant products of logistics research is the military use of this equipment to obtain increased logistical responsiveness, to speed up logistical data processing requirements, and to make it possible for logisticians to "manage by exception"—that is, to concentrate their efforts on problem areas. Its use reduces and optimizes the data that commanders and their staffs must process and analyze. The high-speed electronic digital computer has also proved to be practical in the peacetime CONUS logistic system. Extension of its use to the Army in the field is not a simple process, but rather requires extensive equipment adaption and system changes.

RUGGEDIZED Automatic Data Processing (ADP) equipment has been under development for a number of years and the delivery date of engineering models is fast approaching. This family, referred to as "Fieldata" equipment, is designed to operate with the Army in the field. While mobility itself is a difficult requirement, the most important part of research in this area is to determine various computer applications feasible for the Army in the field and at what organizational levels the equipment will be used. A number of completed applications studies are presently being programmed and prepared for field testing at the Army



Future possibilities resulting from Army research include this concept of flying crane—among many other needed items of military hardware.

Electronic Proving Ground, Fort Huachuca, Arizona.

A major task still remaining is that of integrating the individual application studies into a complete logistic management system. This research is being conducted by personnel of the Army Electronic Proving Ground, the Technical Services, Department of the Army staff and agencies, CONARC, and the Lincoln Laboratories of Massachusetts Institute of Technology.

In finding proper uses for ADP equipment, careful consideration must be given to things which it is *not*. It is not a panacea for all the Army's headaches. It cannot "think." It is not cheap. Budget limitations do not permit its unrestricted use. For some operations, it is no better than office calculator and similar business machines.

ADP, however, offers the potentiality for improving the effectiveness of logistic decisions at various echelons of command. "Logistic War-Rooms" have always existed but their effectiveness has been hampered by the untimeliness of data and the inability to process or select important pieces of information from the voluminous data available. In some respects ADP, supplemented by improvements in communications reliability and capacity, provides the logistician with a facility paralleling the Tactical Operations Center.

MUCH research remains to be done, however, to determine just how the logistical operations center using ADPE will be organized and to what degree it will be a control or coordinating agency.

Organization and Use of Logistical Commands. During World War II, logistical organizations were loosely knit from a command viewpoint and their composition was "tailored" to fit a particular situation. This resulted in poor response to demands and inadequate allocation of available strength to logistic support.

Logistic organization for the future must be "in being," trained and equipped to do its job. It must have high esprit, respond rapidly to combat demands, and receive strong command direction. To accomplish this, the "Logistic Command"—a product of logistic research and study—was devised and has now been adopted by the Army. A field manual (FM 54-1) covering its operations has recently been published. The Army's logistic system now has the command organization to make it responsive to the combat needs of future wars.

Simplification of Requirements Determination. Looking a little further into the future, research is investigating a concept which may seem more radical than any previously discussed. A reduction in the number of people in the combat zone would not only depopulate the battlefield, but also would enhance mobility by reducing logistic tonnage requirements. One method of doing this would be to reduce the number of people required to process demands for and distribution of material.

Research is now being conducted to determine if automatic data processing will permit modernization of the World War II automatic supply concept. Under this plan, status reports from using units

would be channelled to a computer in the rear area of the army in the field which would compute the flow of materiel required to maintain established levels at the using units. Changes in consumption rate would be recognized immediately by the computer and used to adjust future shipments. To provide for emergency situations, the flow could always be adjusted by messages from the using units.

It appears that this concept could be utilized for classes of supply that have a fairly regular demand, such as Class I and III; and perhaps it can be made applicable to portions of Classes II, IV and V. Further research and field tests will be conducted to determine the feasibility and practicability of this concept. This is but one of many research actions designed to provide a more adequate and timely flow of materiel to using units, thus permitting the reduction of reserves.

Promising Outlook

THE Army's accelerated program of logistics research holds forth the promise that the job of solving the Army's major logistics problems will be approached on a coordinated and systematic basis. It promises that the job of designing the logistical organization and system for any future war will be accomplished concurrently with the development of tactical concepts and hardware. It promises that, in any future war, our combat forces will be provided the best possible logistic support. And finally, it promises that an intensive and continuing effort will be made to get the most out of every dollar that the taxpayer provides for logistical purposes.

Future Army Needs

LOOKING ahead for the coming twelve years, more than 100 representatives of industry, scientists and Army officers attended a two-week series of conferences on future Army needs, held in March under auspices of the Johns Hopkins University Operations Research Office (ORO).

Among questions studied were the weapons needed to make small groups of infantry and armor superior to larger enemy forces; vehicles needed to carry men and weapons long distances without breakdown and high fuel consumption; devices, tactics and communications facilities needed to locate targets of opportunity; and types and numbers of ships and aircraft required to move Army forces wherever needed.

The conference drew up suggested priorities for virtually all items on the Army's present research and development program as well as a number of proposed new ones.

The conference recommended establishment of an over-all Army Military Systems Command. Under this concept, the present Army Research Office would provide direction for basic research, applied research and component development. The present Combat Development Experimentation Center at Fort Ord, California, would specify military operational requirements for proposed weapons and equipment.

Under the Army Military Command, the conferees proposed establishment of three new divisions—a Materials Experimentation Development Center to measure performance of items under development; an Army Institute of Advanced Military Studies to look ahead and clarify long-range goals; and an Army Military System Center, to draw together work of other divisions and determine exactly which military systems should be developed.

The Army Chief of Research and Development would still continue to establish policy and would select and

guide the executives of the proposed command. The actual program would be executed by existing organizations.

Some of the findings included:

Firepower. Even when nuclear weapons are disregarded, the Army's firepower has increased tremendously because of rocket propulsion, electronic guidance, and better warheads. Improvements are still possible, but the problem is not so much how to increase our destructive capability as how to bring it to bear.

Strategic mobility. The Army must have at its disposal enough long-range aircraft to lift designated forces in any kind of weather and enough high-speed ships—30 knots and higher—to carry the heavy equipment and follow-up forces. The Army should clearly state its requirements for these transpost facilities.

Tactical mobility. Increases matching the increases in firepower are not likely any time soon. Nevertheless, vehicles can be given greatly increased range simply by increasing their reliability, and research and engineering studies looking toward this end are needed. Among other needs: an intensive research program seeking a compact, lightweight nuclear reactor for combat vehicles.

Logistics. Promising projects include better fuel-handling equipment, vehicles able to operate either on or off roads, aircraft that can take off and land vertically.

Communications. Radio is indispensable but some emphasis is also needed on substitute emergency techniques.

Security and protection. The best protection against nuclear weapons is to deter their use by making clear to the enemy that we will use them if he does. Our nuclear delivery capability must be preserved.

Air defense. The field army should be able to defend against both aircraft and missiles. Highest priority should go to a man-portable air defense weapon now under development.

Medical protection. For a better opportunity for developing methods to prevent or treat radiation and other types of injuries, research and development funds for the Army Medical Service should be considerably increased.

**Service-wide sports competition and training
furnishes solid support for the**



ARMY INFORMATION DIGEST

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ARMY ROLE IN THE OLYMPICS

Master Sergeant Robert L. Groover

WHEN the VIII Olympic Winter Games officially ended at Squaw Valley, California, on 28 February, the U. S. Army could look back on more than a year of intensive preparation that helped assure success of the international event. Working in cooperation with the Air Force, Navy and Marines, Army men constructed starting platforms, ski slopes, parking lots, communications systems, and the other facilities necessary in staging this spectacular international sports competition.

A 1958 Act of Congress granted the Secretary of Defense authorization and funds to get the job done at Squaw Valley—a site destined to become a state park after the Olympic Games. The Congress also authorized use of members of the Armed Forces and allocated funds for the building of an Olympic village by commercial firms.

The Secretary of Defense assigned the job to the Army. Thus began

the enormous task of coordination among the services and the assembling of necessary equipment from installations across the Nation.

By early 1959 a unit called the Department of Defense Support Detachment had been formed under local management of Sixth U.S. Army Headquarters, at the Presidio of San Francisco, California. By the time the Games actually got underway, this unit had been at work in Squaw Valley for nearly a year and had more than 700 members.

BESIDES setting up facilities for the games, the Army screened its outstanding athletes as possible participants. Army Circular 28-4 provided for establishment of training camps where its athletes could be trained, put through competitive trials and finally selected for Olympic consideration.

Ten of the Army's winter athletes were finally selected to represent it in the Olympic ski jump, ice hockey and biathlon events. This marked the first time that the winter biathlon had ever taken

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is assigned to the Information Office, U. S.
Army Air Defense Center, Fort Bliss, Texas.



Army equipment helped keep heavy snows under control at Squaw Valley, California, during the VIII Olympic Winter Games.

place during Olympic competitions.

During the actual Olympic Games, the U. S. winter biathlon team and the ski jumper failed to score impressively, but at least one member of the U. S. Olympic ice hockey team—Specialist Fourth Class John McCarten, of Fort Carson, Colorado—so successfully tended goal for the U. S. group that it emerged untied and undefeated to win a Gold Medal for the United States in ice hockey competition for the first time in Olympic history.

WITH the VIII Olympic Winter Games now history, the Sports Branch of the Special Services Division, Office of the Adjutant General, has begun selection of Army athletes to carry the U. S. banner

to Rome, Italy, for the 1960 Summer Olympic Games in July.

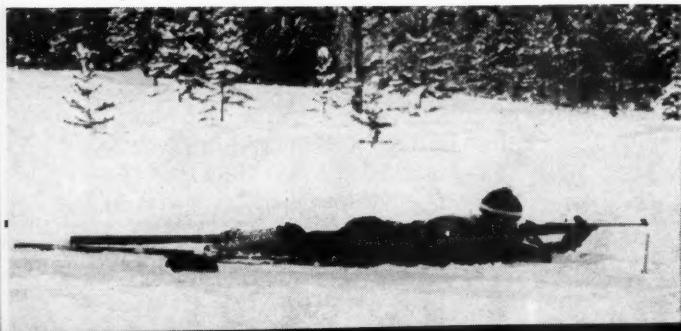
In the 1956 Summer Olympic Games at Melbourne, Australia, Army athletes had brought home three Gold Medals and four Silver Medals, to put the Army in the best Olympic light it had ever known.

LIKE their winter counterparts, Army summer athletes undergo concentrated training for about 60 days during which emphasis is placed on physical conditioning and fundamentals. The last few days of the training period is devoted to the selection of the team to represent the Army in National Championships.

Army eliminations in basketball were conducted from mid-January to mid-March at the Presidio of San Francisco, California, and the resultant group—the Army All-Stars—later went on to the Interservice championships.

The service team that advanced farthest in the National AAU tournament was declared the 1960 Interservice Basketball Champion, and participated in the National championships at Denver, Colorado, in late March—followed closely by Olympic trials, also at Denver.

Army eliminations in boxing took place from 1 March to 15 April at Fort Bragg, North Carolina. Winners in this event took part in



During winter biathlon, S4 Richard Mize draws a bead on one of four targets scattered along the 20-kilometer ski trail.

Interservice championships at Camp Lejeune, North Carolina, in late April and advanced to Olympic trials at San Francisco, California, in early May.

AN Army wrestling team was selected after training and competitions at West Point, New York, during the period 1 March to 22 April. These mat experts—who specialize in Olympic Greco and Roman styles—traveled to San Francisco, California, in early April to take part in National championships at the Olympic Club there. Olympic wrestling trials were held at Ames, Iowa, in late April.

Army eliminations in track and field—U. S. strongpoint in previous Olympic summer games—took place 11 April to 27 May at Fort Meade, Maryland. Winners will go to the Interservice championships to be held under Marine Corps auspices at Quantico, Virginia, in June. National championships in track and field will be held at Bakersfield, California, in late June. Olympic trials in this event are scheduled to take place at Stanford University in early July.

Army swimmers and divers are to be chosen at Fort Monmouth, New Jersey, after eliminations during the period 1 June to 15 July. Winners will go directly to Olympic trials in early August at Detroit.

The U. S. Modern Pentathlon Team has been in training at its permanent home at Fort Sam Houston, Texas, for many months in preparation for this "most grueling of all Olympic sports."

COMMANDERS of the six zone of interior armies, the major over-sea commands, and the Military



54 John McCarten, goalie for medal winning ice hockey team, visits with Miss Carol Heiss, Gold Medal winner in figure skating.

District of Washington, have contributed importantly to the Army's role in the summer games, by reporting Olympic-caliber athletes in their respective geographical areas to Department of the Army.

If Army athletes leave Rome with Gold Medals in hand, much credit must go to Army sports enthusiasts at every echelon who day in and day out worked closely with both the winter and summer athletes in grooming the competitors to Olympic perfection.

A study in contrasts—

The Soviets



THE average Russian youth, serving his first hitch in the Soviet Army, gets three dollars a month, trains from 6 a.m. to 11 p.m. six days a week, and has probably never been on an airplane, in an automobile, or as far away from his home as 200 miles.

He shouldn't be surprised at all this, however, when he shows up for duty, because he knows Khrush-

chev starts in early on his military program and doesn't fool around with patriotic exhortations or soul-stirring appeals.

A Soviet youngster starts taking some form of military training in school at the age of 13 or 14. When he responds to his "greetings from the Soviet Union" invitation to appear for duty, he will have had 100 hours of compulsory training in

Soldier and His Army

Charles S. Stevenson

military subjects—training which included rifle, pistol and machine gun drill with live ammunition.

The first piece of clothing he will get is the Red Army's distinctive gray cotton twill tunic and a canvas and leather belt to go around it. Next, he is handed a pair of cotton trousers, a pair of shoes, a cap and two pairs of underwear, but no socks—these are for officers only. But his feet are not overlooked; for them he gets two pair of cotton foot wraps. In winter he is issued an imitation fur cap, an overcoat, a pair of mittens and one suit of heavy underwear.

A good estimate of the cost of all this is about \$12 per man. An American draftee begins service life

CHARLES S. STEVENSON is Civilian Aide from Western Missouri to the Secretary of the Army. This description of the Soviet soldier is adapted from an article prepared by Mr. Stevenson for the Kansas City Star.

with about \$180 worth of clothing to keep clean and in order.

Training is tough and long. Every new Soviet soldier gets in about 96 hours of training a week, while his American counterpart is receiving 44 hours. He trains with new equipment mostly. Some of it is "second generation" items.

When it comes to eating, the Soviet wouldn't give even a first thought to a turkey dinner for their men. The meals are mostly the same—and dull. The calorie count is 3,000 daily. The American soldier gets somewhat over 4,000 daily.

If a Red lad wants a little extra snack now and then—well, our type of post exchanges or commissaries just aren't a part of the Soviet system.

There is, however, a chain of canteens where he can go for sundries and tobacco—and if he wants

The Soviet Soldier and His Army

to spend about one-third of his month's salary, he can walk out with a pint of vodka.

Conscription Standards

SOVIET physical requirements for acceptance are by no means as strict as those of the United States forces—if 5 feet tall, 100 pounds and awake, the boy is in. Of the million who were conscripted there last fall, nearly all were accepted upon their first physical examination. Incidentally, the Soviet figure of one million draftees is about par for each year. The United States expects to call less than one hundred thousand in 1960.

Conscription fills practically every vacancy in the Soviet Army ground and air forces and in the navy, and everybody is subject to it. The Soviet youth registers with his state when he turns 19, beginning at the same time a bout with a complex method of selectivity which separates, and removes from conscript consideration, those who would appear to be valuable to the state in industry, agriculture, education, or as future officers in the military. Those not qualifying for this elite group are available for conscription. The favored move into higher educational institutions and are relieved of immediate military duty and discipline.

Volunteering is considered an act of personal independence and few so enlist. This is quite different from the situation in the United States where all vacancies in the Navy and Air Force are filled by volunteer enlistments. In the active U. S. Army all but 13 percent are volunteers.

The Soviets do not even encourage reenlistment. Over 95 percent

of their ground forces are in their first three years of service. Possibly one reason is because life in the army is austere. Moreover, it has been reported that there is a policy to limit reenlistments.

As for pay—a Soviet recruit gets \$3 a month. If as a PFC he reenlists after three years, he gets \$30 a month. The Soviet pay scale shows no figure for privates with four years of service—evidence of the reenlistment limitations cited above. A reenlisted corporal will get \$40, a top sergeant up to \$60—providing they have been on the job longer than the basic three-year term of conscripted service.

Officers do considerably better, relatively speaking. The captain of an infantry private can have a take of at least \$270 a month, a colonel \$362, and a major-general \$465. In addition to this, uniforms are free, allowances are made for food and housing, discounts are available in state-operated stores exclusively for officers—and there is no tax on salaries. (See "Pay of Soviet Military Personnel," Sept. 1959 DIGEST.)

Pay and Personnel Policy

UNIQUE feature of the Soviet armed forces pay policy is that both officers and enlisted men get the pay of any job or rank they may be filling. If there are no troops for a top sergeant to scold, his check drops from some 60 dollars to that of a private first class in his fourth year—\$30 a month. This same private, if pinch-hitting for his drill sergeant, gets this sergeant's rate of pay—60 dollars.

An Army officer can aspire to several well-paid skills. If he can fly by instrument and jump with a parachute, or flies more than the

norm, commands a squadron, or is a Class I pilot, he gets additional pay for each ability. By virtue of this and the large number of aviation skills, it is reported that officers in the Soviet air forces end up, on an average, with more pay than ground and naval officers.

One very great difference between the Soviet Army and that of the United States, is that any Soviet troops lucky enough to get a glimpse of the outside world will have to go it alone—no families accompany any Soviet enlisted man any place.

The rivalry between services in the Soviet Union is not evident. There are, in fact, only two services, Army and Navy, and they are tightly controlled at the top. Conditions of service are highly uniform.

When it comes to retiring, few enlisted men are allowed to stay around for as long as 20 years, and since retirement pay for officers is considerably less than their active duty pay, officers stay in just about as long as they can. The Soviets do not necessarily retire their aging or injured officers — administrative, teaching and similar non-strenuous duties are available for them.

Reserve Obligations

COMPLETING his three years of compulsory military duty does not mean the Soviet citizen has no further defense obligation. Every Russian male (and a few women) eventually finds himself in the Soviet military reserve where he stays until he is 50 years old.

This is no file of names on paper cards. It is a planned program which keeps some 35 million Soviet men participating forcibly and con-

tinually in periodic military training, the frequency and intensity depending on the age and military specialty of the individual.

Even those registrants who are not inducted into the armed forces at the time of their call-up, no matter what the reason, do not escape their military obligations. They, along with all discharged service men, go into this reserve, which also includes those who have seemingly little or no military value, but who can serve in labor battalions in the event of need.

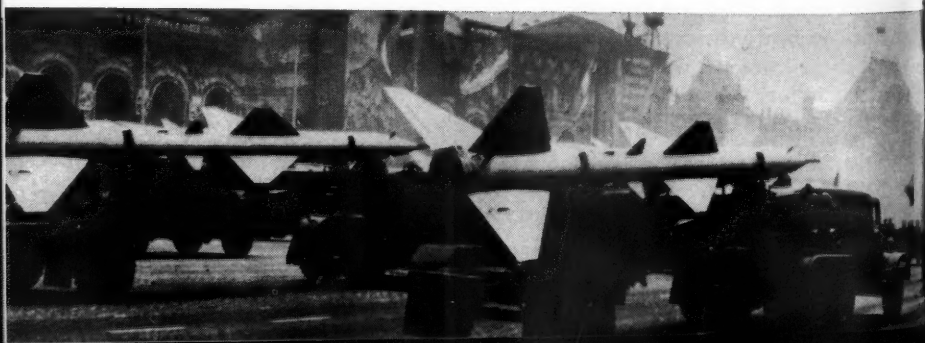
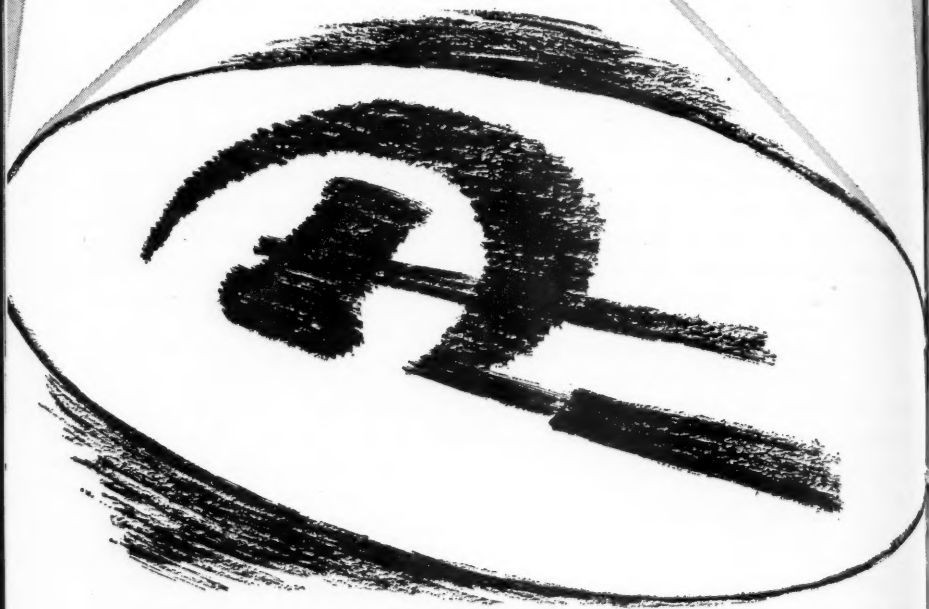
All reservists must keep in touch with the military commissariat, the Soviet's home town military headquarters.

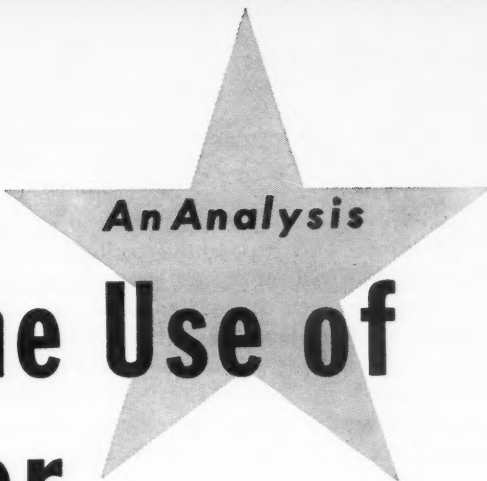
As a result of all this, Khrushchev has just about every Soviet male tied up, militarily speaking, for some 30 years—a condition which almost assures the continuing size and effectiveness of his armed forces as long as Mr. Average Russian and the troops themselves put up with their lot.

WHILE this type of military training may appear to be one of austerity and not conducive to producing good soldiers, Department of the Army *Handbook on the Soviet Army* describes the Soviet soldier as "intellectually, a more simple person than his Western counterpart, but having a stubborn defense capability and initiative in infiltration and improvisation."

As for the Soviet military establishment as a whole, American observers, in the same document, indicate it as ranking today "qualitatively, as well as quantitatively, among the best in the world and constituting a greater menace to the West than ever before."

Soviet Attitude on Military Power





An Analysis

on the Use of Power

"A fundamental shift has taken place in the balance of power between socialist and capitalist states . . . The distribution of forces in the international arena insures a preponderance of the peace-loving states."—Nikita S. Khrushchev.

THUS did Nikita Khrushchev express confidence in the growing strength of the U.S.S.R. and in the future of Communism.

The phrases appeared in his 14 January speech announcing plans to reduce Soviet armed forces strength by 1,200,000 men. Khrushchev used the proposal in a patent effort to portray the Soviet Union as the leading exponent of disarmament and "peaceful coexistence." That the personnel reduction is not disarmament is borne out by the Soviet Premier's admission that lower force levels "will in no way weaken the firepower of our armed forces" and that "there will be no weakening in the defensive power of our motherland." Military might clearly remains a key instrument of Soviet policy.

The Kremlin sees the world as a conflict arena in which Communism and "capitalistic imperialism"

are irreconcilably locked in combat for global supremacy. Its outlook is colored with hostility and fear, and therefore Soviet strategy is, in part, based on national security. Military, as well as political, policies work to safeguard the homeland—the economic base—and the members of the Sino-Soviet Bloc.

Moscow, however, sees expansion and domination as the best way to achieve national security. It is dedicated to making the U.S.S.R. the center of an ever-widening Communist empire. Although the Soviets contend that the tide of history is flowing in their favor, that the triumph of Communism is inevitable, they maintain that the process of change needs to be vigorously and sometimes violently prodded—a belief which gives Soviet policy its aggressiveness and militancy.

The dual aspects of security and

Soviet Attitudes on Military Power

expansion have shaped the character of the Soviet military establishment. The armed forces have been large, balanced, versatile, and imbued with the spirit of the offensive. They have stood ready to engage in direct expansion if favorable opportunities arose, as well as to defend the U.S.S.R. and the Communist system.

World War II altered the Soviet's strategic situation, undermining the defensive and offensive concepts upon which the Red Army had been developed. After the war, the Kremlin—instead of being challenged by European or Asian powers—was confronted by a coalition whose power-center, the United States, was based on the North American continent and immune from direct attack by Soviet forces. More significantly, the United States was armed with a radically new weapon, one which could deliver widespread destruction upon the U.S.S.R. The new circumstances limited somewhat Moscow's freedom of action and compelled the Soviets to pursue courses that would not risk nuclear devastation.

To rebalance their armed forces so that policies could operate under less restraint, the Soviets bent to the task of developing a long-range nuclear capability. This they claim to have done. Khrushchev, in his troop reduction speech, asserted that "the Soviet Union has acquired the necessary supply of atomic and hydrogen weapons" and "the necessary rockets for delivering these weapons." He assured his listeners that Soviet retaliatory forces—secure by reason of camouflage, dispersion, duplication, and triplication—could "give a powerful rebuff to an aggressor."

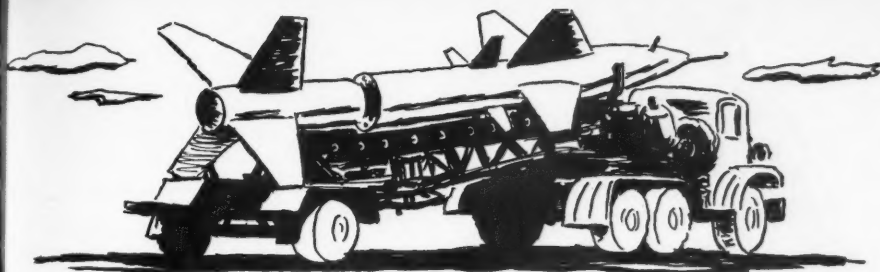
It is the military and technological achievements of the last two years that generated the boast that the "correlation of forces has shifted radically in favor of the Socialist Camp." While the balance of long-range striking power is not now actually weighted on the Communist side, the Soviets are obviously more confident in their relative power position and in the prospect of continuing a favorable trend.

Strategic Considerations

WHAT does this optimism portend for Soviet strategy toward the West? Will the Kremlin, in an effort to hasten the ultimate triumph it foresees, adopt an even more assertive posture, with the armed forces assuming an overt role as well as lending substance to politico-psychological means?

The men in the Kremlin, despite their ideological framework, are practical observers of the world scene and base their decisions in the final analysis on what they calculate to be the relative distribution of political, economic, and military power. They appreciate





Missile is part of Soviet power recently displayed in Moscow.

fully the destructiveness of thermonuclear weapons, and while seemingly assured of their own strength evidently realize that the U.S.S.R. could not escape damaging counter blows in a war with the United States. This was forthrightly acknowledged in Khrushchev's 14 January speech. The Soviet leader, although claiming that the West "would suffer incomparably more" in event of a new world war, made the unprecedented admission for him that the U.S.S.R. also "would suffer great calamities."

In this connection, the Premier restated Soviet caution on the decisiveness of surprise in modern war, a feature of military doctrine to which the Soviets have devoted increased prominence in recent years. Khrushchev declared that the factor of surprise attack with even such formidable weapons as missiles would not achieve victory for the attacker. Although granting that surprise held certain advantages, he noted that it would not enable the aggressor "to put out of order immediately all the stocks of nuclear weapons, all the rocket installations located on the territory of the power attacked."

Khrushchev's remarks are indicative of a strategy aimed at deterring the West, but they are also an avowal that the Soviet Union is itself

deterred from courses of action that run risks of general war.

A NATION with expansionist ambitions is hardly satisfied with a balance of power, and the U.S.S.R. is certainly not content with a stalemate. Nevertheless, Moscow does not appear to be undertaking the extremely expensive task of developing military might capable of eliminating by a first strike the ability of the West to retaliate. Soviet leaders evidently consider it more essential to their longer range power position to fulfill their ambitious economic programs.

To acquire a military advantage, the Kremlin has taken the course of trying to induce the West to reduce or at least retard its military effort. But the Soviet leaders do not seem to be optimistic about their chances of persuading the West to do so. In fact, Khrushchev—even while boasting of growing Soviet might—said that "our enemies . . . will not be marking time" and may soon draw even with the U.S.S.R. in the quantity and quality of missiles.

Soviet military strategy thus appears to be based on the assumption that the United States can keep pace with the U.S.S.R. in military and technological developments, that a nuclear stand-off



exists, and that both sides are deterred from general war. Even so, the Kremlin is not likely to view the situation as static and without prospects for advancing Soviet objectives.

Moscow surely intends to exploit the actual or apparent stalemate which has been achieved in long-range nuclear weapons. If the Soviets did not expect to make gains in the present circumstances, then they would probably engage in a massive program to develop a preponderant military advantage. But, in the Kremlin's view, there is an alternative to seeking victory in a nuclear war.

Targets of Opportunity

THE SOVIETS evidently see the current situation as one in which the range of Western responses to Communist initiatives can be limited, and therefore new opportunities are available for increasing the scope and intensity of political-psychological means and even for armed conflict at levels short of general nuclear war.

The most likely targets of heightened Soviet pressure are the under-

developed areas. The Sino-Soviet Bloc in the last five years has made deep inroads into Afro-Asian countries with economic and military assistance, and the Soviets probably expect — as their Seven-Year Economic Program progresses — to be in a position to extend more and more aid. Improving the economic well-being of the peoples of the underdeveloped countries is not, however, the end sought. It is a technique in the campaign to draw nations into the sphere of Soviet influence and ultimately into the orbit itself.

Conversely, the economic offensive is designed to reduce the position and influence of the West. To succeed in diverting the resources of Asia, the Middle East, Africa, and Latin America away from the Western markets would in itself be a major achievement for the Communists in their drive to weaken the political, economic and military posture of the West.

Thus far, the U.S.S.R. itself has refrained from resorting to direct military action to advance its position in underdeveloped areas, and the Kremlin would undoubtedly prefer to win its objectives there by non-military measures. But they must be eager to see Communist or pro-Communist regimes installed, and will be seeking opportunities for more assertive operations.

Counting on their over-all military posture to deter the West from reacting effectively, the Soviets may encourage and assist vigorous and militant actions such as civil strife and revolution. The veiled Soviet warnings issued in the 1956, 1957, and 1958 Middle East crises forecast an ominous and pointed use of threat in peripheral areas. More-

over, the Kremlin stands ready to commit forces which are especially designed to seize and hold territory.

Need for Ground Forces

SOVIET military authorities contend that nuclear weapons increase, not decrease, the need for large ground forces, and that the U.S.S.R. must be prepared to wage either nuclear or non-nuclear warfare. Hence, the development of weapons of mass destruction has not led to any deemphasis upon the role of ground forces. Although the stress in Khrushchev's recent troop reduction speech was on missiles and nuclear deterrence, the continued importance of numerically strong and balanced forces was reaffirmed.

In a speech seconding the Khrushchev proposal, Minister of Defense Marshal Malinovsky explicitly adhered to the Soviet doctrine of coordinated combined-arms actions. He stated that "it is not possible to solve all tasks of war by one type of troops. Therefore, proceeding from the premise that the successful carrying out of military actions in modern war is only possible on the basis of unified use of all means of armed fighting and the combin-

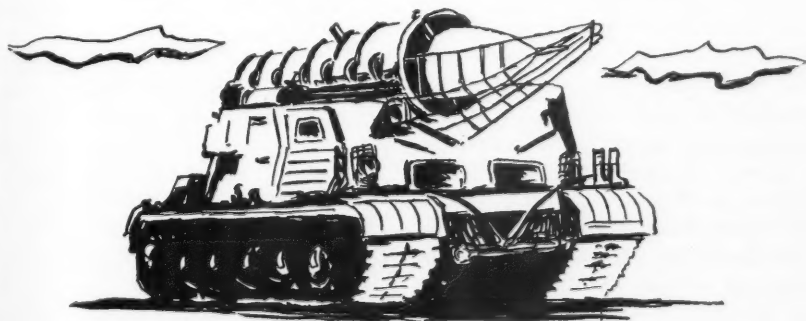
ing of the efforts of all types of armed forces, we are retaining at a definite strength and in relevantly sound proportions all types of our armed forces."

Even if the troop reduction is fully implemented, the Soviets will retain a high potential for dealing with a wide variety of contingencies. Their capabilities for military actions ranging through local, limited, and general war will remain unimpaired.

In spite of their optimism growing out of recent missile achievements, the Soviets recognize that they are not in a position to choose whatever strategy seems most desirable. They continue to be deterred from courses of action carrying with them grave risks of a nuclear exchange. On the other hand, they may believe that their own deterrent capability has been sufficiently enhanced to permit them to adopt a wider and more aggressive range of actions at levels short of general nuclear war.

The retention of numerically strong and balanced forces is concrete evidence that the Kremlin seeks not just security but satisfaction of Communism's historic goals.

Rocket mounted on heavy tank chassis rolls through Red Square.



**Dollars and manhours are saved
by scientific sampling methods when**

The Army



DURING this census and election year, it is virtually impossible to pick up a newspaper without finding a "poll" of some sort featuring a factual or opinion survey. It may be as simple as the inquiring photographer's interrogation of citizens passing along the street, or it may be as elaborate as the Bureau of Census survey now

underway that seeks to reach every individual in the country.

Since 1943, the Department of the Army, too, has been using a "polling" method of gathering factual and opinion information. By surveying a scientifically selected sample of military personnel, the Army is able to answer with ease and accuracy hundreds of questions

Army Takes a Poll

Lieutenant Colonel Kenneth S. Hitch

presented by general and special staff sections, Congressional committees, the White House, and other governmental agencies. The Adjutant General of the Department of the Army directs compilation of these factual and opinion data.

PRIOR to mobilization for World War II, Army strength, including the Air Corps, was less than 190,000. Information pertaining to personnel characteristics of the Army was obtainable without too much difficulty or expense from records in the field and from status cards maintained in The Adjutant General's Office.

By 1943, however, Army strength measured in the millions. As strength reached the seven million mark, the central status file was discontinued because of the immense burden faced by field units in submitting feeder reports to maintain this gigantic card file. In its place, a scientific sampling method was adopted.

LIEUTENANT COLONEL KENNETH S. HITCH, Adjutant General's Corps, was Officer in Charge of the Sample Survey, Personnel Management Branch, Personnel Research and Procedures Division, Adjutant General's Office, from 1956 to 1959.

On 31 December 1943, the data collection method now known as the "Sample Survey of Military Personnel (RCS AG 366)" was inaugurated as a quarterly, two percent sample survey of Army personnel. As now set up, the survey covers ten percent of commissioned and warrant officers and five percent of male enlisted personnel on a quarterly basis and 100 percent of enlisted Women's Army Corps personnel annually.

The general purpose of the Sample Survey of Military Personnel has not changed over the past seventeen years. As stated in AR 600-45, its purpose is "to provide the various levels of Army command with data for current and future planning in regard to budgetary requirements, to provide information to assist in the establishment of procurement, separation, rotation, and other personnel policies, to provide a reliable source of information to support proposed legislation and answer inquiries from Congress, governmental agencies, and the public at large, and for determining attitudes, opinions, and characteristics of the Army on a continuing basis."



Phrasing of proposed survey question is carefully checked by board of personnel experts. Author is second from left.

THE survey questionnaire consists of approximately 40 questions asked of Army personnel quarterly—in March, June, September, and December. The questions are those which have been submitted to The Adjutant General by various Army staff agencies. The Adjutant General in turn puts the query in proper form, tests the phrasing on selected groups of soldiers to determine if the questions are readily understandable and actually elicit the desired information, and publishes and distributes the questionnaires to Army units world-wide.

When the questionnaires have been filled out by Army personnel and checked by commanders for accuracy, Army Machine Records Units punch the data onto cards. These cards are forwarded to the Department of the Army and processed into final reports for the interested agencies involved.

The question is frequently asked: Just how accurate are samples of only one of every twenty enlisted men and one of every ten officers which are used to project data for the entire Army? The answer lies in the sampling method.

Selection of personnel to be polled is accomplished by a designation of the last two digits of the

Army Service Number. Since there are one hundred possible combinations of two digits, ranging from 00 to 99, each set of two digits will cover approximately one percent of the Army. Five sets of two digits chosen at random are used to provide the approximate five percent coverage of enlisted men, and ten sets of two digits are used to provide the ten percent coverage of officers. This scientific method of selection is one of the reasons why dependable results are obtained.

Certain categories of personnel are specifically excluded from the survey—namely, those being processed for separation, individuals in medical holding detachments, personnel enroute to and from overseas commands, and individuals who are as yet unassigned. As a result of these exclusions, the survey coverage is never actually five and ten percent but more like four and eight percent.

Each quarter, statistical controls are utilized to determine the representativeness of the sample. From time to time, it is possible to contrast data obtained by the sample with an actual total count. Whenever this has been done, the accuracy of the sample survey has been demonstrated.

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A personnel officer at Fort Gordon, Georgia, orients group of 504th Military Police Battalion on procedures for completing Sample Survey of Military Personnel.

The sample technique, it has been found, is the most economical method of collecting data. When only *one* man is interrogated to obtain information rather than *twenty* men, the dollar and manhour savings are readily apparent.

WHAT sort of information is gathered? Who uses this information and for what purpose?

To illustrate, here are just a few of the many reports derived from one recent survey:

LENGTH OF TIME IN GRADE IN WHICH SERVING: This report, together with reports on **TEMPORARY PROMOTION AND PERMANENT PROMOTION** eligibilities, is used by the Deputy Chief of Staff for Personnel to plan promotion allocations. From reports such as these, planners learn the number and percentage of E-7's who have been in grade various lengths of time. Actually,

the Sample Survey shows that more than one-third of E-7's have been in grade eight years or more, while two-thirds of E-4's have less than a year in grade.

VOTING: After each general election, a study is conducted to determine how many soldiers were given information concerning their voting rights and to learn how many actually voted.

AGE of officers and enlisted men is required for many policy planning areas. Sample finding: the average age of Army officers is 35, average age of enlisted men, 26.

PLANNED PERIOD OF RETIREMENT: As an example, this report gives manpower planners the information that 13.5 percent of Army majors plan to retire in 1961.

EDUCATIONAL LEVEL OF ARMY PERSONNEL, it has been found, shows a much higher standard than the general population. More than



Increased use of electronic data processing systems is expected to make reports available to the users much more rapidly than in past.

90 percent of officers have had some college training, and six of every ten have one or more college degrees. About two-thirds of Army enlisted men have had twelve or more years of education.

CAREER INTENTIONS: This report, for example, indicated that 93 percent of Regular Army officers and 70 percent of Other Officers plan to make the Army a career.

STATES OF RESIDENCE: New York state ranks first as the home residence of men in the Army, followed by Pennsylvania, California, Texas and Illinois.

THE necessity of obtaining useful, accurate information economically is a paramount consideration in Army planning. With the increased availability of electronic Automatic Data Processing Systems in the Department of the Army and in major commands, it is expected that reports can be made available to the users much more rapidly than in the past.

As a rule, procurement of information from the field on a census basis is generally not approved if the information can be obtained accurately from the Sample Survey.

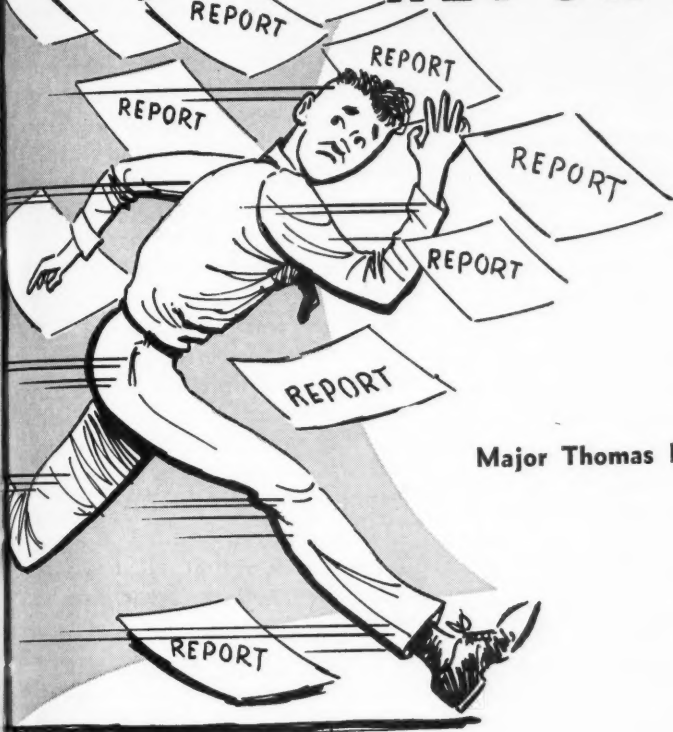
Theoretically, each Army officer is polled once every two and a half years and each enlisted man once every five years. Most likely, therefore, you have already participated in the Sample Survey of Military Personnel. In any event, it will be coming your way at some day in the future.

WHEN you are asked to complete the questionnaire, do it accurately and sincerely, remembering that you are representing many individuals of your grade and experience and that your answers are essential to Army planners.

Decisions can be no better than the information on which they are based, and in compiling such information the maintenance of accurate and timely records and reports plays an important part. Remember, too, that millions of dollars and manhours are saved each year by means of the Sample Survey of Military Personnel. Whenever you are confronted by a Sample Survey questionnaire you can be certain that the information is required for planning and budgeting, and will be used in the best interest of every Army member.

Everyone has a share in lightening
the burden of

TACTICAL UNIT REPORTING



Major Thomas D. Drake, II

THE company commander wearily removed his cap and settled into the chair, casting a disgruntled look at his IN basket. It had been a hard and hot day at training. He didn't relish the task of poring through those accumulated papers. But if he didn't, tomorrow would see the stack even higher.

As he buckled down to the task, the thought passed through his mind: "If only they would relieve us of this reporting, we might have time to do a better job of training."

MAJOR THOMAS D. DRAKE, II, General Staff, is assigned to the Office, Director of Progress and Statistical Reporting, Office of the Comptroller of the Army.

Tactical Unit Reporting

Why *doesn't* someone do something about it?"

"SOMETHING" is being done—but it requires the efforts of every Army member who engages in administration in any manner.

As early as 1953, General George

H. Decker, then Comptroller of the Army, directed that a survey be made to evaluate the reporting workload of tactical organizations in training. A study of tactical units in three divisions—Infantry, Armor, and Airborne—concluded that the reporting workload was more burdensome than necessary. However, it was found that actual administration involved in preparation of requisitions, cooks' work sheets, rosters, and the like was even more burdensome than the reporting. (See "Lightening the Unit Workload," January 1955 DIGEST.)

The same survey disclosed that, on the average, some 1220 submissions are made by a company during a year. Further, it was noted that there was a substantial area subjected to corrective action within the tactical units themselves. In fact, more than one-third of the reporting workload at the company level was created by requirements originating within the Division.

These findings pointed to a single conclusion—that all levels of command could do something to correct the situation.

Follow-Up Actions

BY 1958 several actions had been taken by Headquarters, Department of the Army. Certain Department of the Army reports had been rescinded or revised to eliminate preparation of reports at the company level. A list of recommended "Do's and Don'ts" had been disseminated to unit commanders to assist them in correcting their own reporting problems. A course on principles of reporting had been devised for introduction

PRINCIPLES OF REPORTING

THE Principles of Reporting as expressed below are merely extensions of the Principles of Leadership. The following are covered in more detail in AR 335-20:

- Establish a real necessity for the data being required. Do not require a report just to police compliance with an order, to avoid the inconvenience of having to make personal contact, or to detect a violation of orders or regulations.

- Issue the reporting requirement in writing so that everyone may clearly understand what is desired.

- Gather the data from the highest echelon possible. Use data already available in another staff section of your headquarters. The data may be a month old but does that make a real difference?

- Use a report form when at all practicable to minimize the amount of writing or typing required.

- Review your reports at least once a year to ascertain if they are still essential to your operation or if they could be revised in any way to make the preparer's job easier.

- Do not require a report monthly if you are only going to take action on the data quarterly.

"Actual administration involved in preparation of requisitions, cooks' work sheets, rosters and the like was more burdensome than the reporting."



into the curriculum of the Army Service Schools.

A follow-up study of one of the divisions originally surveyed in 1954 and subsequently reorganized under the Pentomic concept was undertaken to ascertain if corrective measures that had been applied were effective. Here it was found that the total reporting workload of the division was less than half the total in 1954, due primarily to the lesser number of units within the division. At company level the workload was about 15 percent less than the approximately 100 man-hours previously required.

Of the fifteen Department of the Army reports formerly prepared at company level, nine had been removed from that level through actions initiated by Headquarters, Department of the Army. Two others were removed from the company to battle group level through the division reorganization. Thus, only four Department of the Army reports were being prepared at company level.

DESPITE this, it was found that virtually all of the local reporting

problems observed in the former survey still existed. These included:

- Unnecessary and duplicating reports.

- Reports being used as a substitute for inspection and direct supervision; to secure relief from responsibility by acquiring the signature of a subordinate as a certification of accomplishment; to police compliance with a regulation or order; or to publicize a program through reporting extent of participation.

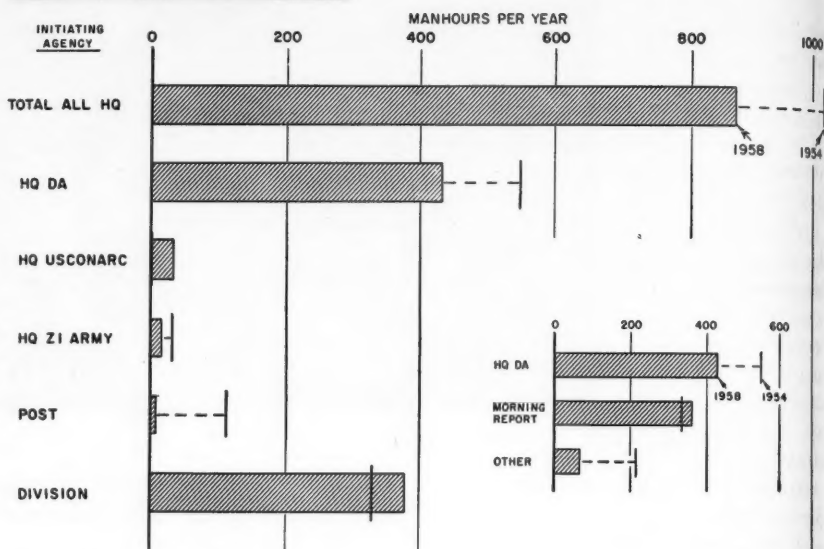
- Poor procedural mechanics, such as reporting at too frequent intervals, duplicating other reports in part, or requiring too much detail.

- Continual turnover of personnel, both officer and enlisted, at a rate precluding a highly efficient and orderly reporting structure.

Once poor reporting practices were pointed out, commanders and staff members were quick to see the advantage and correct the situation.

At the same time, the survey findings reaffirmed the need for basic instruction in the principles of reporting. Accordingly, a course of

Tactical Unit Reporting



instruction was designed for presentation to officers attending advance or associate advance courses. This group, it was recognized, now makes up the majority of staff officers in tactical units and is destined to become the commanders and staff officers of the future. The course has now been made available to Army Service Schools for incorporation into the curriculum.

Workload at Company Level

WHILE satisfactory progress had been made by Headquarters, Department of the Army to remove its reports from company level, the reporting burden at company level was still considered excessive. Actually, while overall reporting workload of the company had been reduced slightly, an increase in Morning Report requirements had offset much of the advantage achieved by removing Department of the Army

reports from the company level.

Other echelon requirements had decreased also—except for Headquarters, U. S. Continental Army Command and the division. Increase in USCONARC requirements was attributed to its expanded command role since the original survey. In only one echelon was there a significant increase, and that was within the division itself—principally in areas of personnel, training, fire prevention and safety reporting.

Improving Division Reporting

FROM the data gathered it was concluded that, of all levels, the most significant improvement could be made by the division itself. In fact, recommendations made by the Tactical Unit Survey at the one division revisited would, it is estimated, result in reduction of about 35,000 manhours per year in the

reporting workload. Of this amount, the division could effect 63 percent, or approximately 22,000 manhours per year, by its own actions.

The main deficiencies found in Division reporting systems appeared to stem from three factors:

First, there was a lack of knowledge of what information was available within the staff. For example, G-3 might initiate a report on the number of personnel involved in a particular phase of training without realizing that all or most of the data was already available in the Adjutant or G-1 sections.

Second, a report was often required of the wrong organization or individual. An example would be the required reporting by each company of replacements just assigned, when the same data could be obtained from the Replacement Section of Administration Company.

Third, requirements would be continued for reports which were out of date due to changing circumstances such as change of mission, reorganization of the staff, or decreased need for the information. Since reports were seldom reviewed to re-establish their accuracy or need, many were perpetuated after the original need had disappeared.

Guidance Furnished

TO PROVIDE immediate guidance to tactical units on methods and principles of reporting, a list of "Do's and Don'ts" was revised and incorporated into AR 335-20. This regulation also suggested means for clearing reports at each command echelon. A central location would maintain a file on all reports being required of and available within the Battle Group or Battalion. Thus the initiator of a



One-time reports should be subjected to the same careful scrutiny as recurring ones, including establishing need for information.

new report could be told which staff member already had the information or from what source it could be economically obtained.

Another function of central control would be to review unit reports periodically for pertinency and ease of preparation. Many reports, it was found, were continued merely because they had been prepared and submitted under the old regime, and new arrivals were unaware that they were outmoded. By periodic review, these conditions could be uncovered and eliminated.

Steps to Improved Reporting

AS HAS been pointed out, three main steps have now been taken to reduce reporting in the tactical units—

- First, reduction in the number of reports being required of companies or batteries by Headquarters, Department of the Army.



Even on maneuvers, the ever-present need for reporting activities must be met, so files follow as troops take to the field.

- Second, introduction into the service schools of courses on principles of reporting.

- Third, issuance of AR 335-20, providing immediate guidance to tactical units on methods and principles to improve reporting.

To these steps must be added three others which indirectly will benefit the units:

- Guidance on technical aspects of sound reporting practices has been disseminated to reports control officers located at installation and higher levels. This guidance is in the form of three DA Pamphlets—335-1, "Reports Control at Army Installations"; 335-2, "Development of Reporting Forms and Directives"; and 335-3, "Evaluation of Reporting Proposals." These pamphlets provide reports control officers with the means to improve their reports and reporting systems, some of which affect tactical units.

- Reports Review Boards have been established at each command echelon and each Headquarters, Department of the Army staff agency to review recurring reports required by their command or agency. Here reports will be subjected to critical scrutiny on how the command or agency benefits from the

report, with a view toward effecting substantial reductions. The Boards are to be continued until the commander believes no other reductions are possible. Information to date indicates that substantial reductions have already been effected in many areas by Board action.

- An Army Establishment Reporting and Analysis Requirements Project was set up in June 1957. Currently headed by a Steering Group of five general officers, one from each of the Deputy Chiefs of Staff, the Project has been concentrating on reporting requirements initiated by Headquarters, Department of the Army. Despite the complexity of the task, its effort has resulted in a significant reduction in the Army's reporting requirements for the first time since the end of World War II. In addition, many reports have been revised in such a manner as to reduce the effort expended and yet furnish the necessary information to Headquarters, Department of the Army.

One-Time Reporting

ALL the foregoing methods, it should be noted, pertain to recurring reports. Yet many reports which are required on a one-time basis

present their own special problems.

Problems generated by random use of one-time reports are particularly evident in tactical units. Unit correspondence files are jammed with the answers to such requests. Often the initiator of the one-time report does not realize that his query may completely disrupt the administrative processes of the company which may not have adequate records available. Often, such information can be obtained only by inventory of records at the Unit Personnel Section or by a canvass of personnel.

One-time reports should therefore be subjected to the same careful scrutiny that is demanded of recurring reports. This includes establishing a real justification and need for the information; determining who can most economically prepare the report; when, how and in what format it is to be submitted; and what information is required.

The Army's reporting problem is not new, and certainly it is not going to vanish completely in the future, despite the inroads now being made. In order to manage its far-spread enterprises, the Army must have reports to furnish the information on which decisions may be based. As long as there are reports, problems will be many and varied.

Just as the tactical commander must have knowledge of the principles of war to meet successfully the many challenges encountered on the battlefield, so must he have knowledge of the principles of reporting to meet the challenges of informational needs of the modern Army. Only by properly applying proven principles will the commander be able to establish reporting systems that will obtain the information he needs to arrive at sound decisions with a minimum of effort and disruption for all concerned.

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*Maintenance methods are streamlined and overhauled
under the Army program of*

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eThan Rebuild

Colonel William B. Latta

THERE was no disagreement in the Colonel's mind as he carefully studied the manual and read *"Maintenance, indispensable to all successful logistical planning and tactical operations, achieves its ends only when it achieves them economically."*

Colonel John E. Harbert, Chief of Maintenance Branch, Field Service Division, Office of the Chief of Ordnance, ran his hand through his hair and tried to smooth his

furrowed brow as he read further in Army Maintenance Management Manual, FM 38-5. The problem confronting him — and under study by many others in Ordnance as well — was just exactly how to achieve greater economy in the everyday maintenance of thousands of items of equipment.

In 1956, the maintenance problem was a key concern of the Deputy Chief of Staff for Logistics. Normally an ever-present problem, it had been rendered even more acute since limited funds available dictated that the glamour equipment such as aircraft and missiles must be supported first. In June 1956, the Deputy Chief of Staff for Logistics directed the Chief of Ordnance to develop and use a system of inspection that would prevent rebuilding of uneconomically repairable items, and to develop a stricter policy on rebuild of equipment.

COLONEL WILLIAM B. LATTA, General Staff, is Chief, Materiel Maintenance Division, Office of the Deputy Chief of Staff for Logistics, Department of the Army.



Repair Rather Than Rebuild

Colonel Harbert's reading and thinking were interrupted by the telephone. "John," said the voice at the other end, "This is Colonel Supensky. I think we've got it."

Four hours later Colonel Harbert was watching the countryside unfold 10,000 feet below him. He was on his way to the Tooele Ordnance Depot, about 40 miles southwest of Salt Lake City, Utah, where Col. John A. Supensky was in command. The Depot had become a "center of initiative" in translating into actual accomplishments—within the framework of overall policy of the Chief of Ordnance—the objectives of the Deputy Chief of Staff.

At Tooele, Colonel Harbert was soon to witness a test of the principles that Colonel Supensky had evolved. The test was a rebuild run on some fourteen hundred jeeps. Modern engineering techniques were applied to all key areas in the rebuild operation—production control, plant layout, methods, tools, jigs and fixtures, time standards and cost control.

Results were so successful that the principles soon were being applied to a production run of 215 M-47 tanks, which proved all the theoretical work that had gone before. Thus was born the Ordnance Corps IROAN approach—Inspect and Repair Only As Necessary.

Basic Concept

TO UNDERSTAND the radical changes introduced by this new concept of Depot Maintenance pioneered by the Ordnance Corps, and its significance to the Army and the American taxpayer, it is necessary to know something of the entire maintenance picture.

The purpose of maintenance—

unchanged since the Revolutionary War—is to provide a service designed to reduce to an absolute minimum the Army's requirement for new material. To be economical, maintenance must be carried on only to the point where cost of new parts and labor would not exceed purchase of an entirely new item, whether staff car, truck or tank. The crux of the problem is to find the balance point. IROAN is one path to this goal.

Rebuild of equipment is not new to the Army, where it is actually of greater importance than in many civilian organizations, since the Army's many special purpose vehicles are expensive to buy in the first place, and expensive to operate and maintain. In the Army, the rebuild process took on all the aspects of an industrial assembly line, characterized by complete disassembly of parts and components, thorough reconditioning of them, and then a reassembly of the reconditioned parts.

However, following the Korean War, it became evident that this production line type of rebuild was being carried on beyond economically desirable limits. Sometimes equipment was being accepted for depot rebuild when a field maintenance operation—inspection, minor repair and replacement of major assemblies—would have been adequate. It became apparent that over-maintenance was creeping in; and the entire problem was further complicated by obsolescence as new items were produced. To rebuild items that would shortly be obsolete obviously was uneconomical.

That, briefly, was the situation in 1956 when the Chief of Ordnance was directed to devise solutions.

Rebuild of equipment, it was found, was practiced differently at the eight Ordnance depots in Continental United States, depending on condition of the unserviceable equipment and availability of tools and parts. Some of the problems that plagued existing operations included unrealistic parts forecasting; complete disassembly for rebuild; massive planning requirements; lack of time standards; increasing labor costs; excessive manhours, low production, poor delivery rates.

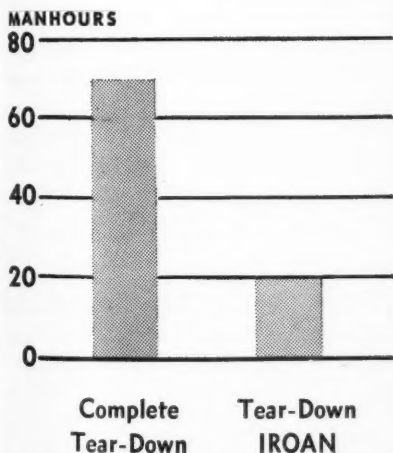
Pondering on these problems, Colonel Supensky at Tooele finally evolved the idea of directing the main efforts toward a completely engineered environment in which to produce a quality product with substantial time and cost savings. To accomplish this he envisioned suspending the complete disassembly and reassembly of items. Instead, established diagnostic tech-

niques would determine exactly what was wrong with an item. Carefully established standards would assure essential combat effectiveness and safety—but would not provide refinements for appearance only, such as completely replacing dented but still serviceable body parts.

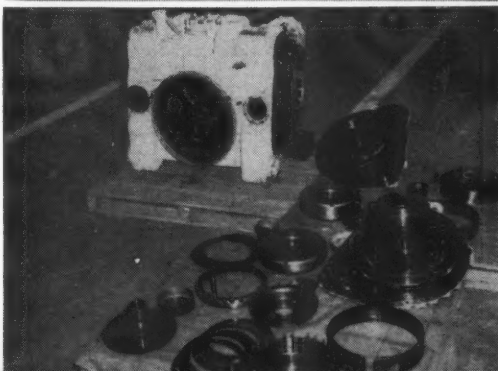
In short, the heart of the IROAN system is the use of effective and reliable diagnostic techniques locked up with standards which will not compromise essential combat effectiveness or safety. IROAN does not preclude tear down or rebuild; rather, it places emphasis on establishing the necessary degree of tear down and rebuild on an individual vehicle basis.

Old system of complete tear-down of transmission cross-drive of tank, above, involved inspection of multitude of parts, compared to simplified new method, below.

AVERAGE MANHOURS FOR M47 X-DRIVE TRANSMISSION



JUNE 1960



Repair Rather Than Rebuild

Having worked out the plan in as much detail as possible, Colonel Supensky put in his call for Colonel Harbert. The first tests proved the feasibility of the concept, and today IROAN is an accepted and valuable method of achieving greater economy in maintenance of Army vehicles and equipment.

PROBABLY the most important single factor in reducing cost and manhours required to recondition vehicles has been the changeover from complete disassembly of all components to disassembly only to the extent necessary to perform needed repairs. By using diagnostic testing equipment to pinpoint needed repairs prior to disassembly, it was possible in many cases to perform repairs on the test stand.

An outstanding example of this technique is use of the chassis dynamometer to check out engines and power transmission components. Under the old method, all engines would have been removed and processed through a rebuild line. Under a recent IROAN program 2894 engines were tested by dynamometer prior to reconditioning. Of these 1276 were found acceptable after minor tune-up; 737 required minor repair such as new rings or valve grinding; and only 881 required reconditioning similar to that performed on all engines under the old system.

Forecasting of parts requirements—heretofore largely based on historical usage projections—has been vastly improved. Now the jet stream IROAN procedure determines parts requirements by actual physical inspection, using function testing and analytical equipment. By ordering parts only in required quantities,

very substantial savings are realized.

As one example, under the old method 1527 different parts were ordered for a run of 453 1/4-ton trucks. Under the IROAN method only 1148 different parts were ordered for 2950 1/4-ton trucks. Similar reductions are pertinent to both wheeled and tracked vehicles.

Of special interest at Tooele Ordnance Depot is the parts reclamation program. High-cost assemblies and parts such as fenders, generators, starters, tires, are recovered from washout vehicles at a considerable saving over those obtained through normal supply channels.

Application of the IROAN techniques has directly reduced maintenance costs with a corresponding increase in depot maintenance productivity. Four rebuild programs recently completed under IROAN have resulted in savings of approximately \$16,000,000 in maintenance costs as compared to the old method. These programs included 164 M-74 tank recovery vehicles, 2776 M38A1 1/4-ton trucks and 110 M-211 2 1/2-ton trucks.

INTRODUCTION of IROAN brought the concept of "overhaul" into wider use, rather than "rebuild" which is popularly regarded as an effort to create a "like new" vehicle. The term "overhaul" is used to describe what is actually done rather than reflecting an ideal standard. (See box.)

IROAN techniques soon became a model for standardization of tank-automotive procedures throughout the entire Ordnance depot maintenance system in continental United States. These procedures were the result of a coordinated team effort

REBUILD. To restore an item to a standard as near as possible to original or new condition in appearance, performance, and life expectancy. This is accomplished through the maintenance technique of complete disassembly of the item, inspection of all parts or components, repair or replacement of worn or unserviceable elements using original manufacturing tolerances and/or specifications and subsequent reassembly of the item.

OVERHAUL. To restore an item to completely serviceable condition as prescribed by serviceability standards developed and published by heads of technical services. This is accomplished through employment of the technique of "Inspect and Repair Only as Necessary" (IROAN). Maximum utilization of diagnostic and test equipment is combined with minimum disassembly of the item during the overhaul process.

REPAIR. To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes but is not limited to, inspecting, cleaning, preserving, adjusting, replacing, welding, riveting, and straightening.

From D/A Circular 750-22, 1 December 1959.

by Ordnance maintenance elements, with notable contributions by personnel of Maintenance Branch, Field Service Division, Office of the Chief of Ordnance and of Ordnance Tank-Automotive Command at Detroit, Michigan.

In 1958 IROAN was officially adopted by the Ordnance Corps and an Army Regulation—AR 750-2300-8, Depot Maintenance Standards for Ordnance Tactical Wheeled Vehicles, 19 June 1958—furnished general guidance in the new depot maintenance philosophy. To insure that there would be no compromise with quality and that all depot maintenance activities would operate with a common set of standards, the Chief of Ordnance published a comprehensive set of minimum standards on which the IROAN techniques could be applied worldwide to tank-automotive equipment during reconditioning operations.

The Operating Program of the Deputy Chief of Staff for Logistics, which records Army-wide maintenance objectives and policies, priorities and standards, has been amended to include IROAN as a major policy change in the overhaul and maintenance of materiel. Henceforth, complete overhaul of materiel is prohibited. Maintenance of equipment by each technical service is to be accomplished on a selective repair analysis and not on a complete overhaul basis.

Already, IROAN is proving to be an effective "invisible shield" against high maintenance costs in the other technical services.

The Chief of Engineers is taking steps to establish an Engineer IROAN Testing Laboratory at all Engineer Depot Maintenance Shops in the continental United States. This laboratory will contain various IROAN instrumentation and

Repair Rather Than Rebuild

testing units to determine serviceability of Engineer end items and components without the necessity for complete or partial tear down inspections.

To this end, an IROAN committee composed of highly qualified maintenance personnel from the Office of the Chief of Engineers and from Engineer field installations met in 1959 to formulate plans for the coordinated development, fabrication and/or commercial supply of testing units for the Engineer IROAN Testing Laboratory.

The general concept and preliminary design of ten testers have since been completed, and fabrication is scheduled to begin this year, with installation in CONUS Engineer depot maintenance shops to begin in FY 1961. These testers will cover the entire range of makes and models of mechanical equipment assigned to the Corps of Engineers. For example, the IROAN testing unit for crawler tractors will accommodate and test the product range of the three major commercial producers.

IROAN is being extended to Army aircraft and other Transportation Corps equipment. Beginning in January 1960, IROAN was to be completely implemented for Army aircraft, and the previously existing Standard Configuration and Modernization Program (SCAMP) discontinued. SCAMP required that aircraft be inspected and reconditioned at fifth echelon level on a three-year basis, regardless of actual condition. Under the new IROAN program Army aircraft will receive an annual inspection to determine fourth or fifth echelon maintenance that may be required. This will decrease maintenance

costs and result in increased operational availability.

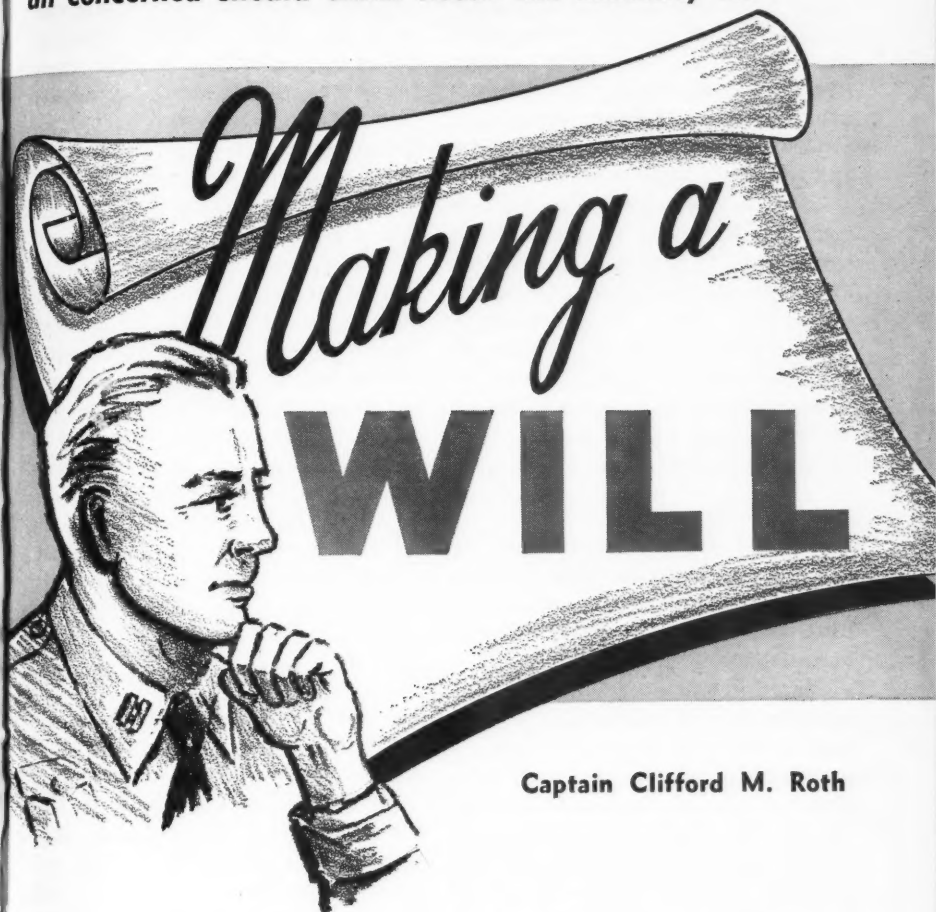
IROAN is also an important factor in improved maintenance discipline at all echelons. In many cases in the past, expenditure limitations and proper inspection criteria were not observed; materiel was returned to depots for overhaul when it should have been salvaged or repaired by field maintenance shops. Also, repair and replacement of appearance-type items had been carried out beyond the point needed to return the equipment to a serviceable condition.

By vigorously applying IROAN procedures and requiring the continued use of all functional parts to the maximum limits of their designed life, much can and is being done toward reducing maintenance malpractices. By stressing a "leave it alone when it works" approach, the Army is achieving a more favorable maintenance readiness for combat with a lesser expenditure of limited funds.

In summary, there are many areas in maintenance management in which there is a clear challenge to balance maintenance needs with overall long-term economic objectives. There are better ways to do things. It is up to Army members at every echelon, in every branch and technical service, to work out common problems together, to share the ideas which lead to greater efficiencies.

Rapidly changing times require vision and alertness to insure our country's military strength for the future. By its innovations in the maintenance field, the IROAN concept has contributed importantly toward the attainment of vital Army objectives.

Old soldiers may never die but before fading away
all concerned should think about the necessity for



Captain Clifford M. Roth

BEING a firm realist who deals with life and death and the legal problems attached to both, the Army Judge Advocate General recently cast a trained eye on the matter of making wills, and learned that only 57 percent of officers and 21 percent of enlisted personnel of the U. S. Army have made wills. Consequently The Judge Advocate General is urging that all Army personnel consider the importance of having a properly prepared will.

In essence, a will is a person's declaration of what is to be done after his death. Usually it relates to the disposition of one's property.

With a will the maker can predetermine, subject to legal limitations, what disposition should be

CAPTAIN CLIFFORD M. ROTH, Judge Advocate General's Corps, is assigned to Legal Assistance Division, Office of the Judge Advocate General, Department of the Army. He is a graduate of Chicago-Kent College of Law and member of the Illinois Bar.

Making a Will

made of his property after his death. He can also name the party whom he wishes to entrust with the task of carrying out his wishes—*i.e.*, an Executor in legal terms. If he desires, he may also name some other person or organization as a Guardian of the person and property of minor children.

Such a document obviously is operative for no purpose until after the maker's death, and it becomes applicable to the situation which exists at his death. However, it can be changed during his lifetime as conditions may change. Such conditions, for example, might be divorce or death of the spouse, or of any children named in the will.

Your Worldly Estate

A WILL is a projection of man's normal desire to provide for his family. Yet many either put it off until too late, or simply refuse to consider the need for it at all.

Many may neglect making a will because they do not feel they have accumulated sufficient of the world's goods. (After all, nobody enters the Army with expectation of getting rich.) Yet acquisition of money and property is not abrogated by military service. Everybody with a family has some worldly goods; some have made wise investments; some have acquired or inherited property; others have insurance programs; and even if none of these has been accomplished there is the matter of death gratuities and Veterans Administration and Social Security income for minor children that should be considered. Consequently making a will is important to every individual.

A will may be a simple document, drawn up by the individual

and signed in the presence of witnesses who should affix their names. Yet if there is considerable property or if the family situation may demand it, the will of necessity may be more complicated. A person drawing up a will should have legal assistance, to make certain that the document exactly expresses the wishes of the maker. Sometimes, too, a will may reduce the amount of court costs and other fees required in the probate of an estate—but this should not be a major consideration since in some states probating an estate with a will may be just as costly.

Obviously the terms of the will vary with each individual, his family circumstances, his desires and the needs of the possible survivors. To advise and assist the individual, Legal Assistance Officers are available at most Army posts. All Trust Companies and most banks have officials who will be glad to assist.

As the Law Provides

WHAT happens to an estate if there is no will?

In such cases the property will be distributed to the decedent's relatives in accordance with the laws of the state of which he or she is a legal resident. These laws also prescribe the formula for naming an Administrator. The court-appointed Administrator of an estate is distinguished from an Executor who may be named by the person making the will. The laws also prescribe for appointing a Guardian for minor children.

Frequently under such circumstances the family may not be provided for as the individual may have wished. Even further, the disposition of real property and bank

accounts or other goods may be tied up for many years because the property is partially owned by children. In such instances the surviving spouse is faced with the situation of being virtually unable to touch any part of the estate without a court order.

In preparation of a will, most men quite naturally designate the wife as the sole beneficiary and Executrix, taking it for granted that she will handle the estate and look after the welfare of the children. Yet it may happen that both husband and wife die together, or the wife does not long survive the husband. Such a situation raises the question of guardianship of the minor children. This can result in long and costly litigation among relatives over custody of the children. The wise serviceman will provide for such a situation by carefully stating his wishes in the will.

It is also an excellent idea for the individual to consider having his wife draw up a will when he does. This is especially desirable when the wife may have property in her own right. It also is advisable for each spouse to have a will with fairly similar provisions for caring for the children in case of death of both parents.

SELECTING an Executor and/or Guardian is a matter of major importance. Many states require that they be residents of the state in which the will is to be probated, or in which the guardianship is to be established. Rules vary considerably between States, and there are many qualifications and modifications. This should be carefully considered, since if under the State law

the Executor or Guardian cannot qualify, the courts must appoint an Administrator — who may be a stranger or even somebody objectionable to the maker of the will. However such action normally will not affect the other provisions of the will.

Usually most men provide for children to live with a close relative in case of death of the wife. While such relatives may be excellent as far as guardianship of the "person" is concerned, they may be totally lacking in qualifications for managing the estate. Consequently the person making a will should understand the difference between a Guardian and a Trustee. He may desire to name some relative to act as Guardian of the children and some other person or agent to act as Trustee of the estate.

Administering the Estate

WHILE many servicemen may feel that they have not sufficient property to warrant making a will, yet there usually will be more to an estate than is commonly realized. Besides the value of insurance and other property, it should always be remembered that in the event a serviceman dies on active duty, there will be income from the Veterans Administration and Social Security Administration. Therefore where minor children are concerned, the serviceman should make a will designating the person who will raise the children, the person best qualified to supervise the preservation and use of the property, and stipulating when that property is to be turned over to the children without restrictions.

As an example, in the case of two minor children surviving, there

Making a Will

would be an income of about \$100 per month from the Veterans Administration and another \$100 to \$125 per month from the Social Security Administration. The amounts diminish when the youngest child reaches age 18, but the Veterans Administration will continue certain payments until age 21 if the child is in school. Special provisions also exist for disabled children beyond this age. This income usually will be ample for the children until they reach college age. Usually the Guardian will not have to use the funds left by the deceased parent or parents; and the problem therefore is to preserve the estate for a number of years.

In normal instances, where sufficient income may be anticipated to carry the children through the years until they enter college or are able to provide for themselves, the individual may desire largely to conserve the remainder of his estate. On the other hand, if conditions permit, he may desire that a liberal investment policy be pursued in order to increase the size of the estate and provide as much as possible for the children when they come of age.

According to one's preference, the property may be placed in control of either a Guardian or a Trustee. Essentially it can be said that a Guardian is required by law to be extremely conservative, whereas a Trustee may be less so, providing he is not reckless or lacking in prudence.

Since management of large sums may prove difficult for an untrained person, most states have strict laws controlling the activities of Guardians, rigidly restricting investments and expenditures and calling for

annual reports. Accordingly, most guardians, of necessity, find it expedient to invest the property in U. S. Government bonds or other conservative securities. No one can dispute the safety of such investment, and whether the guardianship exists for a short or a long time, the fund will remain intact and will also earn a small amount of interest.

As an alternative—always considering the elements of risk attached—the individual may be willing to permit funds to be invested with the expectation of growth. This may most easily be achieved by use of a testamentary trust with a professional Trustee such as a bank or trust company. This is less costly than most persons realize, since most large trust companies charge an annual commission of only \$5 per \$1,000 on the first \$50,000, \$2.50 per thousand on the next \$450,000 and \$2 per thousand on all over \$500,000. In addition, a trustee collecting rents and managing real property is allowed a management commission of 6 percent of the gross rents collected. When the principal of the estate is paid out by the trustee, he is entitled to a fee of 1 percent.

Even though the estate may not be large enough to consider use of a Trustee, it may still be an excellent move to name a trust company or bank or lawyer as Guardian of the property of the minor children, while a close relative or friend acts as Guardian of the person.

Assistance Available

ANY serviceman can consult with a Legal Assistance Officer who will advise him of the type of will he needs and either prepare the

will or refer him to a specialist if the estate is large. But in any case the serviceman must be prepared to spend sufficient time with the attorney and give him full details so that he can draw up a will that is best for him and his family.

The serviceman should examine his will about every two years to determine if any changes are advisable. Changing a will should be considered in the event of change of domicile, birth or death of children, divorce or death of spouse or guardian.

Sometimes the answers to all problems cannot be quickly resolved and as a result making a will is put off for many months. From a

practical standpoint, it is better to draft a will even though it does not cover all contingencies. An incomplete will is certainly better than no will at all.

In substance, making a proper will calls for a sensible plan in accordance with the testator's wishes and his family needs and, in sizable estates, due attention to the tax consequences. It calls for full consideration of contingencies which may occur after execution of the will and which may be guarded against by apt and proper provisions. It requires strict compliance with legal rules and, above all, it demands clarity and certainty of expression.



Courtesy Southern
Bell Telephone Co.

"...reserving, however, the right to come back and get it, if I find I can take it with me."



of professional interest

Big Slam Tests Airlift

Twenty thousand troops, eleven thousand tons of equipment, transported in 370 aircraft of Military Air Transport Service (MATS) flying 925 trips, requiring each aircraft to fly approximately three sorties—that is a quick statistical summation of the two-week Exercise Big Slam-Puerto Pine, which ended 28 March.

In one of the largest airlifted movements of its kind, troops from 78 STRAC units at 29 home stations outloaded from 13 departure airfields, flew to an overseas staging area in Puerto Rico and returned. The exercise tested the complex supply and operational problems involved in deploying a sizable force over great distances.

Marshall Space Center

The Development Operations Division of the Army Ballistic Missile Agency, Army Ordnance Missile Command, Huntsville, Alabama, will be redesignated the "George C. Marshall Space Flight Center" when the facility separates from the Army and goes to the National Aeronautics and Space Agency 1 July. The division is under direction of Dr. Wernher von Braun. The new name honors the late General of the Army George C. Marshall.

Missile Units to USAREUR

Two Lacrosse guided missile battalions have recently been sent to the U. S. Army in Germany—the Fifth Missile Battalion, 42d Artillery and the Fourth Missile Battalion, 28th Artillery. Other Army missile units now serving with the U. S. Army in Europe are the Nike, Honest John, Corporal and the Redstone.

Missiles Replace Guns

Exit—classes on antiaircraft gun maintenance at the Air Defense School, Fort Bliss, Texas, following graduation of the last class of 22 men composed of Army National Guardsmen and four members of the South Korean Army.

The decision to eliminate such classes for technicians highlights the Army's changeover from antiaircraft guns to missiles. Four years ago the Army had one battery of Nike missiles to 50 of antiaircraft guns; today the situation is reversed, with 50 Nike batteries for every gun battery. However, antiaircraft guns, of which the Army has a large inventory, still will be kept for use, a school spokesman stated.

Pershing Test-Fired

Successful firing of the Pershing, the Army's newest and longest range surface-to-surface missile, recently was accomplished at Cape Canaveral. This was the first firing at the Atlantic Missile Range for the missile which now is in the research and development stage. Although it is a two-stage, solid-propellant missile, only the first stage was fired over a purposely limited range. Martin Company of Orlando, Florida, is prime contractor.

Guard in Nike Role

By mid-1961, the Army National Guard will have taken over full time operation of 36 additional Nike-Ajax batteries from the active Army, and also will be manning six Nike-Hercules batteries full time in Hawaii. Since taking over its first batteries in the Los Angeles area in September 1958, the Guard has assumed operation of 40 batteries in ten major population centers.

Little John Contract

Contract for initial production of air-frame components for Little John, the Army's newest and most advanced free flight rocket system, has been awarded to Emerson Electric Manufacturing Company, St. Louis, Missouri. Developed by the Army Rocket and Guided Missile Agency, Redstone Arsenal, Alabama, Little John can deliver either nuclear or conventional warheads to "ranges beyond 10 miles." In recent tests a nine-man crew emplaced, fired and displaced the entire system in 10 minutes, using two H-34 helicopters under simulated battlefield conditions.

New Civilian Award

A new award, the Outstanding Civilian Service Medal, has been established to give recognition to members of the public and noncareer Government officials who render substantial service to the Army. It may be awarded by the Secretary of the Army when the accomplishment is of Army-wide significance, or by major commanders when of significance only to the command concerned. The new medal will rank next after the Distinguished Civilian Service Medal established by Department of the Army in 1957. Both these awards rank equally with the Exceptional Civilian Service Decoration and the Meritorious Civilian Service Award for career civilian employees.

Missile-Borne TV Camera

A miniature television station designed to enable a ground commander to see actual target damage inflicted by the missile was carried aloft for the first time recently by a Redstone ballistic missile fired at White Sands Missile Range, New Mexico. Housed in a small capsule, the camera is ejected from the missile, takes pictures while falling to earth, and relays them back to the commander who may be as far as 75 miles away.

National Strategy Seminar

A National Strategy Seminar, held in April at Asilomar Conference Grounds, Monterey Peninsula, California, brought together members of the Reserve Forces, the Armed Services, and civilian leaders to examine critical phases of the conflict

between the Free World and Communist bloc, with emphasis on military and economic factors.

Course materials were prepared by Stanford Research Institute in cooperation with other professional organizations.

Sponsored by the Commanding General, Sixth U. S. Army in cooperation with the Commander of Western Sea Frontier and the Commanding General, Fourth U. S. Air Force, this year's seminar was an outgrowth of the National Strategy Seminar for Reserve Officers authorized by the Joint Chiefs of Staff and conducted by the National War College in 1959.

Trafficability Studies

A closer study of the earth that the foot soldier must travel over as he meets the enemy on the ground is being made by Army scientists at the Army Mobility Research Center, Vicksburg, Mississippi. Efforts are being stepped up to learn how soil reacts to weight, driving, turning and braking forces of military vehicles. Aim of the studies is to learn at what stage of continued traffic, and under what moisture conditions, a section of soil will break down and fail to provide traction. The study also is designed to increase knowledge of off-road mobility and provide data for design characteristics in transporters that will allow military vehicles to move on all types of surfaces.

Patterson Memorial Award

The Robert P. Patterson Memorial Award has been presented to Lt. William T. Bayha, Sellersville, Pennsylvania, as the most outstanding graduate of the Army's Infantry Officer Candidate School, Fort Benning, Georgia. The award, consisting of an engraved automatic pistol, a check for \$250, and a scroll, was made by Secretary of the Army Wilber M. Brucker. Lt. Bayha is the eighth Officer Candidate School graduate to win the award since it was established in 1952 in memory of the late Secretary of War Patterson.

Chemical Hazards Analyzed

Continuous research aimed at preventing toxic injury resulting from new defense materials—and also many existing compounds—is carried on through the

Back Cover

THIRD in a series of posters supporting Army Information objectives, DA Poster 355-6 is currently being distributed to Army units and organizations world-wide to advance the theme of the essentiality of a modern Army "that this Nation shall not perish." The poster is scheduled for release in June to coincide with the anniversary of the Army's founding 14 June 1775.

Health Hazards of Military Chemicals Project at Army Chemical Center, Edgewood, Maryland.

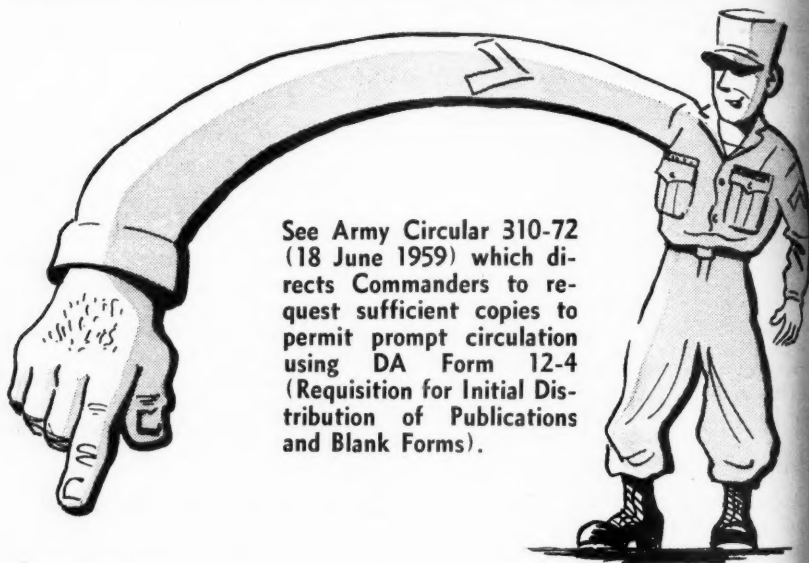
For the past ten years laboratory studies at the center have sought to detect any poisonous effects of chemical materials used by the Army, Navy and Air Force. From this research, measures are taken to protect the health of military and civilian employees. Many of its findings have wide civilian application.

Some of the military chemicals under study are products of the space age, such as rocket and missile propellants, oxidizers, fuels for air-breathing aircraft engines;

others are everyday compounds such as fire extinguishants, hydraulic fluids, solvent cleaners. In studies of carbon monoxide poisoning, for example, much information has been obtained on safe levels for continued exposure of human beings to gases generated by combustion engines.

The special project was conceived in the late 1940's when other Department of Defense laboratories began calling on the medical research facilities of the Army Chemical Center for toxic studies of various chemical materials. As a result, the Health Hazards of Military Chemicals Project was established in 1949.

Do You Get the Digest Regularly?



See Army Circular 310-72 (18 June 1959) which directs Commanders to request sufficient copies to permit prompt circulation using DA Form 12-4 (Requisition for Initial Distribution of Publications and Blank Forms).

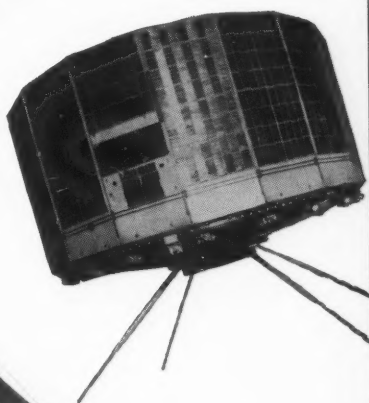
Distribution:

To be distributed in accordance with DA Form 12-4 requirements.

**Army-Developed
Weather Satellite**

Turns

TV Eyes on the World's Weather



TIROS, a pillbox-shaped, spin-stabilized weather satellite which photographs and transmits an 850-mile square view of the earth's changing cloud cover patterns, has been placed in orbit as part of the National Aeronautics and Space Administration program.

Housing two television cameras and powered by banks of solar cells or sun batteries, the weather-reporting satellite is providing meteorologists with detailed pictures of hurricane and cyclonic patterns of value in long-range and immediate weather forecasts.

TIROS, an abbreviation of Television Infra-Red Observation Satellite, was developed by Radio Corporation of America for the U. S. Army Signal Corps. Although the satellite fired into orbit 31 March does not have infra-red sensors to map relative temperatures of the earth's surface, it is expected that a later one will be so equipped.

A large-area TV camera carried by TIROS is augmented by a second camera which pinpoints smaller sections of area cloud formations. Information gathered by TV cameras in individual photographs is stored on magnetic tape in the satellite and then fed, on radio command, to

ground stations—at Fort Monmouth, New Jersey, and at Kona Point, Hawaii. Back-up stations are at Hightstown, New Jersey, and Cape Canaveral, Florida.

These stations can "order" photographs three orbits in advance, when the satellite's position and the sun combine for the best picture possibilities. In addition, when the satellite is in range, it can be commanded to transmit the TV picture of the moment directly to a ground station, without being taped.

The entire satellite system was developed under technical supervision of the U. S. Army Signal Research and Development Laboratory, Fort Monmouth, New Jersey, by the Astro-Electronic Products Division of RCA at Princeton, New Jersey.

Army Signal Corps participation in the TIROS project is a highlight of the Corps' centennial year. The Signal Corps has engaged in meteorological studies since 1870, when it was authorized by Congress to organize the Nation's first weather reporting and forecasting service, which subsequently became the U. S. Weather Bureau. The Signal Corps also developed the first weather satellite, Vanguard II, which was launched 17 February 1959.

ESSENTIAL

A black and white photograph of three soldiers. In the foreground, a soldier wears a helmet with a communication antenna. Behind him, another soldier in a helmet looks forward. To the right, a third soldier without a helmet looks towards the camera. The image has a high-contrast, graphic quality.

MORE
MODERN
THAN
TOMORROW

YOUR

UNITED STATES **ARMY**

"That this nation shall not perish"